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Depreciation and Other Reserves.*

By Alfred Knight,
General Auditor of The Fleischmann Company.

The truth in regard to affairs is sought by the accountant. In arriving at the truth, however, difficulties are often encountered through speculative elements which enter into the work. Depreciation or deterioration of assets is largely speculative, and as it deals with Capital Accounts, the subject is one of great importance. It is a lamentable fact, however, that the principles of depreciation are little understood.

To those who are engaged in enterprises in which capital outlays are large, a knowledge of depreciation is essential for the purpose of developing correct and conservative statements of gains and losses and assets and liabilities from year to year; to those who are engaged in banking, an understanding of the subject is valuable when called upon to look into the statements of customers seeking loans.

While there are perhaps no laws which compel an undertaking to provide for depreciation before distributing profits, the question will doubtless be the subject of judicial opinion at some no distant date; and it may be ventured that a decision of this nature will stamp depreciation as a charge against profits. It is conceded that failure to realize the necessity for depreciation and to make adequate provision therefor has led to many cases of insolvency.

* A paper read before the Cincinnati College of Finance, Commerce and Accounts.

Capital Accounts are charged with the cost of equipping an undertaking on a permanent basis, not with an idea of the assets being disposed of at a profit, but with a view to realizing trading profits through the medium of such assets. While every endeavor may be made to maintain the efficiency of the assets, there is bound to be a deterioration in value through wear and tear, lapse of time, supersession, and other causes,

This is an age of marvelous development, and new inventions are constantly revolutionizing methods. Competition is keen, and the alert business man of the present day must take advantage of improvements in order to keep pace with his rivals in the struggle for commercial supremacy. The rapidity with which changes take place in the construction of mechanical devices becomes an important factor when considering the subject of depreciation.

Objections are sometimes raised against making charges for depreciation, especially by those who are endeavoring to make a profitable showing and pay large dividends. The plea is commonly offered that if maintenance is charged with all necessary repairs and a plant is kept in good operating condition, its cost value is effectively maintained. However, time is bound to develop the fallacy of this argument, as assets will eventually wear out, and if there is no provision made for this replacement, additional capital must necessarily be expended. Should there be no surplus to draw upon, it becomes necessary to increase the issue of capital stock, borrow funds by means of a bond issue, or devote current earnings to purposes of replacement, the latter course interfering with the payment of dividends and perhaps creating dissatisfaction among the shareholders.

There are, of course, instances where assets enhance in value, though this is seldom the case with anything but real estate. To the manufacturer, appreciation in the value of real estate cannot be of benefit unless the property is disposed of. Assets purchased and used for purpose of producing an income and not for purpose of sale should not, therefore, under circumstances other than sale, be subject to increase in value on the books. To those who consider this proposition unfair in view of the fact that the depreciation of property is to be considered, it may be pointed out that real estate and improvements thereon are just as liable to slumps in market value, the latter often being carried, from causes which may arise in a night, far below the original cost figures.

The cost of replacing a brick building erected ten years ago would perhaps be 50 per cent. in excess of the original cost, owing to the present high cost of material and labor. Existing conditions in this respect may be altered at any time, however, and were the assets to be written up to conform to current values, it might prove necessary at a later period to reduce the figures. It should be understood, therefore, that fluctuations in value should have no bearing whatever in dealing with fixed assets on the books unless a disposition is made of such assets.

Depreciation is the writing down of the value of assets in a philosophical manner, by means of a charge to Revenue. It was formerly customary to credit the asset account with the amount written off, and some English authors still maintain that this method is preferable to creating a reserve. The best authorities of both England and the United States, however, are agreed that depreciation can best be handled through the accumulation of adequate reserves, the values (except when assets are disposed of) not being molested. On the Balance Sheet, therefore, the reserve account, which appears as a liability, becomes an offset to the book value of assets carried.

No matter what plan is adopted in providing for depreciation, it should be followed with regularity from year to year, no omission of charges occurring because profits happen to run exceptionally low. It is the methodical preparation for the replacement of assets which produces a satisfactory condition of the Balance Sheet.

In dealing with fixed assets a yearly appraisal of their value fails to accomplish the purpose on a systematic basis, as an appraisement can hardly be made without bringing the fluctuation of market values of material and labor into the question. A readjustment of book accounts based on appraisal figures would be likely, therefore, to have a very disturbing effect on the Profit and Loss Account. It is not claimed, however, that appraisements made with extreme care by persons trained for this work are not desirable from time to time—say once every five years. The information obtained is invaluable for insurance purposes, and also serves as a barometer for the percentage of reserve which is being accumulated for the replacement of assets. Palpable errors should, of course, be made the subject of adjustment, and, if necessary, the rates of depreciation should be revised.

The amount to be accumulated as a reserve should be the difference between the actual cost of the asset and the estimated break-up value when discarded, which sum is thereupon spread over the years of life of the asset. There are several methods of arriving at the annual charge, each of which will be described.

The first method is to charge depreciation each year in equal installments, which has been called the "Fixed Proportion Method." On this plan each year is assessed in equal percentages, based on original values. This method is frequently pursued, and proves the most satisfactory in many instances.

The second plan is to charge depreciation each year in fixed percentages on the diminishing value, and is commonly termed the "Fixed Percentage Method." The percentages in this case are applied to the annual reducing values of the assets, and are consequently heavier than on the installment basis. This is the method most generally used, and produces satisfactory results in a majority of cases when intelligently applied.

When the matter of depreciation is given but hasty consideration, as is often the case, it may be reasoned when estimating the life of an asset at twenty years, that 5 per cent. should be written off annually, and this percentage will then erroneously be applied to the residual value. Instead of extinguishing the value of the asset in twenty years, it will be found that but 64.15 per cent. has been written off, leaving 35.85 per cent. remaining on the books; and further calculation will develop the fact that at forty years there would remain 12.85 per cent., and that after a lapse of one hundred years there would still remain nearly 6/10 of 1 per cent. to be carried over to another century.

When the fixed percentage method is utilized, therefore, the results should be carefully calculated, and the percentage should obviously be heavy enough to reduce the asset to its realizable value when discarded.

The advantages of this method of calculating depreciation are twofold: First, the heavy charges appear against the early years of the life of the asset, which serves to equalize the increases which are bound to occur in the later years in the maintenance expenses, thus distributing the combined cost of depreciation and repairs with some degree of uniformity. Second, as certain classes of assets become older, their earning capacity as a rule becomes

less and less, which again makes it advantageous to place the heavy charges against the early years.

A third method is to create a Sinking Fund to provide for the replacement of assets at the expiration of their estimated life. When this plan is pursued, Revenue is debited with the annual installments of the Sinking Fund, the latter being invested in securities. This method is not commonly used, because, as a general rule, a business can earn a larger percentage of interest than can be obtained by investments in securities.

However, the "Sinking Fund Method" may be employed as supplemental to either of the other plans proposed, if desired, the amount of the reserve being invested, in order that the sum may be available when needed. When the amount reserved is carried in floating assets and not specially allocated, it may not be possible to realize upon such assets at a critical time.

When the Sinking Fund basis is established, the compound interest is calculated in providing for the yearly installments, in order to produce the required amount at the termination of the period.

A fourth arrangement, which is made use of to some extent in England, is the Annuity System. When this method is pursued, interest is charged against assets and a sufficient amount is accumulated annually, in regular installments, to reduce to the residual value of the assets. On this basis the charges to revenue steadily increase as the interest credits decrease, the justification for which is found in the fact that the installments remain as working capital in the business.

The actual cost of maintenance is sometimes added to the annual installments on either the fixed proportion or fixed percentage methods, while another plan provides for the addition of the estimated cost of maintenance and repairs during the life of an asset, in equal installments. While these plans may meet with favor in England, it is considered far more satisfactory in this country to treat maintenance and repairs separately, a special reserve being created, when deemed expedient, to meet such expenditures.

Tables are presented herewith showing results of the various methods of calculating depreciation covering a period of ten years, upon an article costing $1,000, the realizable value at the close of the period being placed at $100:

Years	Fixed Proportion Method. 10% on original Value	Fixed Percentage Method. 20.57% on Diminishing Value	Sinking Fund Method. At 5% Compound Interest	Annuity Method at 5% Interest charged on Diminishing Values
1	$90.00	$205.70	$71.55	$71.55
2	90.00	163.38	71.55	75.13
3	90.00	129.78	71.55	78.89
4	90.00	103.08	71.55	82.83
5	90.00	81.88	71.55	86.98
6	90.00	65.03	71.55	91.33
7	90.00	51.66	71.55	95.89
8	90.00	41.03	71.55	100.68
9	90.00	32.59	71.55	105.72
10	90.00	25.87	71.55	111.00
			$715.50	
Compound Interest at 5%...			184.50	
TOTALS,	$900.00	$900.00	$900.00	$900.00

The application of depreciation to various classes of assets may now be considered, the first group consisting of fixed assets. Allusion has already been made to the impropriety of increasing real estate values; on the other hand, provision for depreciation of land itself is not ordinarily made. While there may be wide fluctuations in value, for the purpose of a "going concern," land may ordinarily be carried at cost price, appreciation or depreciation being considered only when the property is disposed of or in case of reorganization, in which event an appraisement becomes necessary. Should land have been purchased during a period of inflation, or should conditions arise which permanently render the property less valuable than when purchased, due provision should, of course, be made.

Leaseholds are subject to depreciation to cover premium or bonus paid on obtaining a lease, and permanent improvements placed on leased property, providing the latter have been capitalized. When there is an agreement in a lease relative to restoration of premises to the original condition, at the termination of a lease, the estimated expense should also be accumulated. Repairs

are also frequently considered, but there are objections to pursuing this plan.

It is in connection with leaseholds that the annuity system is applied in England; the interest on the investment being charged thereto each year on the diminishing value of the lease. The amount of depreciation is fixed, but as the reserve grows the interest charge decreases, being applied to the remainder. The matter is carried even further by the English, a sinking fund being created and charged against the asset, in addition to interest. In this country we do not resort to these heroic and rather complicated measures.

Buildings of brick and steel depreciate slowly unless subjected to hard usage, through vibration of heavy machinery. From 1 to 1½ per cent. annually on the diminishing value should suffice for buildings of solid construction, while frame structures will require from 4 to 10 per cent., according to solidity of the buildings, frequency of painting, usage, and climate. Speaking broadly, however, a general charge of 1½ or 2 per cent. on all buildings will answer. The latter rate will reduce to 36.42 per cent. in fifty years and to 13.26 per cent. in one hundred years.

In a manufacturing concern it is desirable to have separate accounts for different classes of machinery, such as engines, boilers, generators, shafting, general machinery, special machinery, etc. In the case of the first two items the steam pressure is of importance in determining the rate to be provided, and with boilers the kind of water used becomes quite a factor. From 10 to 15 per cent. on the residual value may be applied to engines, while boilers will stand a charge of from 12½ to 20 per cent.

Generators and other electrical machinery can safely be written off at the rate of from 15 to 20 per cent., and shafting may be charged at from 10 to 15 per cent. General machinery of ordinary patterns should bear a burden of from 7½ to 15 per cent., while special machinery, which may be superseded by improved machinery at intervals and which is not readily salable, should be subjected to a heavy charge of, say, from 25 to 50 per cent.

Should there be no separation of machinery accounts, a general average of about 15 per cent. on the diminishing value would meet ordinary requirements. Of course, the rate is dependent upon the class of business and burden imposed, and in some

instances the rate could, with propriety, be made more conservative, while with others a higher rate should prevail. In the event machinery is in use at night as well as during the day, this fact should materially increase the provision for depreciation on the equipment.

Patterns, molds, and drawings, if capitalized, should be written off at the rate of at least 25 per cent. of the residual value, and a charge of 33⅓ per cent. would not be considered too heavy. Assets of this nature, while necessary to the equipment of a plant, are constantly being changed and improved to meet new conditions, which render the supplanted assets of practically no value. When a business has reached a healthy condition, it is desirable to treat these as expense instead of asset accounts.

It is also the part of wisdom to charge loose tools to expense, but if capitalized, during the early years of the existence of a plant, the account may be closed out within a few years by writing off at a high percentage, the renewal of tools in the meantime being charged to expense.

Before leaving the subject of factory accounts, reference may be made to the fact that in some lines of business where the production of large units necessitates cost keeping on individual jobs, it is often the practice to make a distribution of depreciation charges, each job being assessed, in addition to the productive and a proportion of the non-productive labor, value of material used, machine cost, etc., with its share of depreciation on machines used in the process of manufacture, together with a proportion of general factory depreciation charges. Where such a plan is not pursued, however, the various charges for depreciation are held intact and charged to the proper department of the business.

There is another group of assets upon which depreciation charges should be made, which do not apply to factory costs but to the general business. An administration building and its equipment would come under this head, as would also patents, franchises, and good will.

Patents run for a limited number of years, and depreciation to cover cost can be spread over the life of a patent, though it is well to reduce the length of time. Patents in some instances yield the owners splendid returns for years after expiration, but it is nevertheless desirable to extinguish the capital expenditure in connection therewith.

Franchises, when limited in term, should also be extinguished by the time of expiration. The question of depreciation on the assets of public service corporations seldom receives due attention, however. This is largely due to the rapid growth and prosperity enjoyed by such corporations because of the increase in population, the ever increasing earning power being capitalized in most instances, with but little regard to the value of the tangible assets. An attempt is generally made by such corporations, as may also be said of railroads, to maintain the value of assets through charges to maintenance accounts or by means of funds especially set aside from earnings for replacement purposes.

Good-will is of uncertain value, and while no rule can be laid down as to its treatment, the best course is to dispose of such an account through a charge to depreciation, when, through reorganization or otherwise, an asset of this nature is created, if it proves practicable to do so. The good-will of a business is bound to fluctuate with the earnings produced, and it can therefore hardly be measured. It is contended by some that good-will is a capital account which is in no manner related to revenue, and that any loss incurred is a capital loss and not properly chargeable to revenue. Be this as it may, as a prudential measure the writing off of good-will is to be encouraged.

It is also desirable to close out preliminary expenses, carried as assets in the early days of an undertaking, within a reasonable period of time.

A third group of assets is headed Personal Property, and consists of furniture and fixtures, horses, vehicles, and sundry other movable assets. There is but one safe and satisfactory method of handling such assets, and that is by taking annual inventories, the amount of depreciation being written off the asset accounts when closing books.

A careful record should be kept of all purchases of personal property, and when the inventory is made up a full description of each article should be given in order that comparison may be made with the original record. Notations may be made as to the present condition, and it is well to list the dates of purchase, cost prices, and previous inventory figures on the inventory to serve as guides in placing the new values. The opinion of a practical person who is familiar with the assets under review, with respect to their salable value, also proves advantageous; however, care

should be exercised to see that increases are in no event made over previous values because of repairs, etc., as this would have the effect of capitalizing such expenditures.

When monthly balance sheets are rendered and it is desired to distribute the charge for depreciation through the year, the depreciation on personal property can safely be calculated at from 10 to 20 per cent. on furniture and fixtures; from 20 to 30 per cent. on horses, and from 30 to 50 per cent. on vehicles, all of the percentages named being based on the residual values. At the close of the period the accounts should be properly adjusted.

In creating a reserve in the manner suggested, it should be termed Personal Property Depreciation Reserve as distinguished from Plant Depreciation Reserve, for the reason that the former will be subject to annual adjustment while the latter account continues to accumulate from year to year. The debits to depreciation are, of course, closed at the conclusion of the fiscal year into the revenue accounts to which they relate, or the transfer is made direct to the Profit and Loss Account.

The Plant Depreciation Reserve is subject to charge when complete asset replacements take place, but should otherwise not be disturbed unless a readjustment of values becomes imperative, by reason of appraisement, sale of property, adjustment of fire loss, etc.

Passing to the subject of reserves other than for purposes of depreciation, an Insurance Reserve may first be mentioned. Such an account is created for the purpose of allowing a concern to carry its own insurance, by charging revenue with a stipulated amount annually, which may be based to some extent on premium costs. Adequate protection on this basis can hardly be secured, however, until the reserve reaches an amount commensurate with the value of assets carried. The amount reserved should, by all means, be the subject of a reserve fund, the amount being invested in securities. Such a fund is, of course, an asset which is "earmarked" in such a manner as to show its relation to the reserve account on the liability side of the ledger. In the present instance the term "Insurance Reserve Fund" would properly describe the account.

Allusion has been made to reserves for repairs and renewals. When charges to maintenance accounts run irregularly, an equalization of the monthly expense may readily be obtained by means

of reserves created for this purpose. In arriving at the amounts to be accumulated, the average cost of maintenance for a previous period should be ascertained, and the reserves can be based upon these figures, at the same time making reasonable allowance for increases in maintenance expense and possible charges of an extraordinary nature which may develop. The reserve account should ordinarily appear on the credit side of the balance sheet, and under no circumstances should it be carried as a debit at the close of a year. In fact, it is only permissible to have the account appear thus in cases where repairs are given attention at one period and it is desired to distribute the charges throughout the months of the year.

Reserves may be created to meet contingent liabilities, claims in dispute, variation of weights and measures, and for other purposes. Doubtful accounts receivable, which for some reason it is not desired to write off by placing the amounts to the credit of the accounts in question, may be made the subject of a "Reserve for Doubtful Accounts Receivable." In fact, whenever it is found desirable to make provision for the reduction of assets without actually placing the credit to the account, on charging the required sum to the debit of revenue, a reserve may, with propriety, be created.

When reserves are accumulated in excess of loss or reduction of value which is estimated to have actually taken place, the amount of such excess may be termed a "Secret Reserve." While from the accountant's viewpoint it is theoretically as incorrect to understate as to overstate values, it is seldom that such measures are carried to extremes, experience proving that in a majority of cases, expectations are exceeded in the matter of losses. And while the amount reserved may at some period be larger than necessary, the meeting of immatured losses is likely to equalize the matter in due course of time.

Secret reserves are sometimes accumulated without appearing as such on the balance sheet. The placing of values upon inventories below the proper figures—cost or market, whichever is the lower—constitutes a secret reserve. The same may be said of any other assets, the accounts covering which have actually been reduced below their intrinsic value. Securities purchased at a low cost which subsequently rise in value, form a common source of secret reserve, as the prudent business man is loath to anticipate

profits by writing up the value of such assets. But while it is permissible to allow favorable fluctuation of values to become the subject of secret reserves, a contrary movement should invariably cause a reduction with a consequent charge to Profit and Loss.

The practice which obtains in some quarters, of writing off valuable property in its entirety, is hardly to be encouraged. Banks frequently write off the outlay for fixtures, which plan is not open to criticism, but when the value of real property is dropped from the statement, the action appears extreme. The Bank of England illustrates this tendency, the property of this great institution, which is estimated to be worth fully two million pounds sterling, not being represented among the assets in the statements rendered.

It may be stated in conclusion, that as no actual monetary transaction takes place in creating reserve accounts, in which feature the subject differs from ordinary business transactions, it is largely a matter of opinion as to how accounts shall be treated, rather than a matter of absolute fact. For the purpose of satisfactorily conducting a business along safe and conservative lines, however, an understanding should be had of the principles underlying the creation of reserve accounts, and through intelligent application of these principles much may be accomplished towards obtaining truthful results.

An Example of Depreciation Charges.

By "Lindum."

The fundamental principles of figuring depreciation charges are simple and axiomic. That there is a constant deterioration of used property needs no proof; the fact that market values may be enhanced by extraneous causes need not be considered in connection with the depreciation problem.

Deterioration may be classed under three heads:

1. Natural wear and tear.
2. Accidental breakage and unusual destruction.
3. Obsolescence.

This deterioration must be provided for by:

A. Repairs.
B. Replacements.
C. Improvements.
D. Scrap and selling value of discards.

When A + B + C + D just equal 1 + 2 + 3 then asset value remains constant.

When A + B + C + D more than equal 1 + 2 + 3 then there is a conclusive addition to asset value.

When A + B + C + D are less than 1 + 2 + 3 then there is an impairment of asset value.

Differences of opinion arise when methods of determining these factors are considered, and to these problems I address myself.

First as to asset value; undoubtedly the best measure of that value is an accurate, disinterested physical appraisal of the property considered in the light of its value to a going concern. In default of such an inventory there remains the taking of the cost price depleted annually by a definite percentage according to the term of useful life of the property in question.

In order to set forth any inventory in a satisfactory manner, whether upon the physical examination or the percentage plan, it is necessary to itemize its units, and such inventory may be best

kept upon loose leaves properly bound, upon which each entity may receive the proper entries.

The natural wear and tear is composed of two elements:

First, that obvious deterioration which is made good by repairs; second, that invisible deterioration which is above and beyond the maintenance in working order.

The following table is carefully worked out to show the percentage that it is necessary to write off from each successive year's value to provide for the second of these two elements:

Years of Life	Per cent. of annual Reduction	Years of Life	Per cent. of annual Reduction
5	40	40	6
10	22	50	5
15	15	60	4
20	11	70	3.5
25	9	80	3
30	8	90	3
35	7	100	2.5

A further percentage must be added to provide for the first element, and this can be deduced from the past experience as to the amount of repairs necessary to maintain the property in a going condition.

As I shall endeavor to show later, it makes little difference whether these percentages are exactly accurate or not; in fact they may be quite wide of the mark and yet in the last analysis the differences will be automatically adjusted to accord with the facts.

In adjusting the accounts, the Repair Account (A) should contain nothing except charges making good the obvious wear and tear (1): Replacements, or extraordinary repairs (B), should be limited to the amount necessary to make good the loss in accidental breakages or unusual destruction (2): Improvements, or additions (C), comprise all amounts bettering property or overcome obsolescence (3): Scrap, or selling values (D), need to be carefully allotted to the property from which they are derived so that proper credits may be made.

An Example of Depreciation Charges.

LOCOMOTIVE 875.

		Dr.		Cr.
1901	Cost.....	$18,000	Invisible depreciation, on basis of 15 years of useful life, 15%; Depreciation made good by repairs as shown by experience, 15%. Total of 30%.....	$5,400
	Repair Account...	2,850		
	Replacement.....	1,500	Wreck loss.....	1,200
			New valuation.....	15,750
		$22,350		$22,350
1902	Valuation, down...	15,750	Depreciation 15–15%	4,725
	Repair Account...	2,900	New Valuation.....	13,925
		$18,650		$18,650
1903	Valuation, down...	13,925	Depreciation 30%.....	4,178
	Repair Account...	900	New Valuation.....	15,647
	Betterment.....	5,000		
		$19,825		$19,825
1904	Valuation, down...	15,647	Depreciation 30%.....	4,694
	Gain to Assets due to overestimate of depreciation..	1,047	Sold for.....	12,000
		$16,694		$16,694

In this case it is quite evident that the depreciation percentage was a trifle too high, but the final clearing of the account transfers the excess to the debit side and the error corrects itself. It might have been assumed that the locomotive had been wrecked so that it was worth only scrap value, then the depreciation would not have been nearly sufficient and a deduction from asset value would have resulted just as certainly.

Assuming that the North and South Railroad had by inventory, either by physical examination or depreciation of cost method, $21,000,000 in locomotives; that its experience determined fifteen years as the average life; that their ordinary repairs averaged 15 per cent.; then the following might be illustrative of their depreciation account:

NORTH AND SOUTH RAILROAD LOCOMOTIVE DEPRECIATION.

Value.....	$21,000,000	Depreciation 30%....	$6,450,000
Repairs.....	4,694,375	Wrecks and unusual losses.....	150,000
Replacements.....	190,749	Scrap & Locos, sold...	57,000
Additions.....	979,850	New Valuation.....	20,707,974
	$27,364,974		$27,364,974
Value brought down..	$20,707,974	Depreciation.....	$6,212,392
Repairs.....	4,857,560	Wrecks, etc.....	200,000
Replacements.....	165,000	Scrap and Sales.....	97,500
Additions.....	1,500,000	New Valuation.....	20,720,642
	$27,230,534		$27,230,534

Here it is evident that the depreciation plus receipts from scrap and equipment sold very closely approximates all charges to locomotive equipment. To know if the assumed depreciation is substantially correct it is only necessary to know as to the balance on those items which have completed their term of useful life and have been disposed of; if the average of those are substantially equal then the percentage is justified; if considerable variation is discovered the percentage may be changed; there may be some uncertainty regarding the assumed losses by deterioration and wrecks upon the going equipment, but as the balances during a term of years are continually correcting these assumptions and as the experience of railroads tends to uniformity, there can be no very wide discrepancy between the figures and the facts without its becoming apparent.

This exemplification is made upon the locomotive equipment as that lends itself to a simpler exposition, but the method is applicable to every kind of property and to every kind of business, for as fast as the individual units complete their term of useful life the depreciation is automatically adjusted to the facts.

The Philosophy of Accounts.

By Charles Ezra Sprague,* A. M., Ph. D., C. P. A.
Author of the "Accountancy of Investment" and "Extended Bond Tables."

MONOGRAPH B.

The Merchandise Account.

406. The reader has been cautioned (Article 200) against mixt accounts; that is, accounts partly specific and partly economic. These will, however, sometimes occur thru the imperfections of current accounting: an account which is normally economic will prove to have a residue of the specific when it comes to the nicer adjustment of the balance sheet; and vice versa. This has been toucht upon in the cases of Coal (Article 174-181) and Interest (Article 185-194).

407. There are accounts, as sometimes kept, where it cannot be said that either the specific or economic character predominates; where each phase is important and essential, and where, if practicable, the course of wisdom would be to create two accounts, one representing the specific and the other the economic side of the transactions.

408. A good example of such an account is the Merchandise Account in the form still prevalent but gradually falling into disuse. It is not recommended for adoption, but its structure should be understood, in order that, when encountered in the course of examination of accounts, it may be readily disentangled.

409. Merchandise is something bought at a certain cost-price for the purpose of selling at a higher price. The latter price consists of two parts—one equal to the cost, which it repays, the other the Merchandise-Profit, which is earned by services in bringing the goods near the customer, in selecting them with reference to their desirable qualities, in providing a convenient place where they may be inspected and in holding enough in stock to meet all reasonable demands.

410. Viewed in this light, every sale is properly creditable to two accounts, one part to the asset Merchandise parted with, the other to the income account for the profit.

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411. But it seems to be considered in retail business, even on a large scale, impracticable to separate each sale into its two elements, and to know at each transaction how much goes to replace the goods, and how much to repay the merchant for services, risk, and expense. One would suppose it feasible, and some merchants find it so, to record in a column of the sales-book the original cost of each article. But more usually the sale-price is undivided.

412. The Merchandise Account, therefore, becomes a mixt account. On the debit side, it contains entries at cost-price, and on the credit side at selling-price. No correlation is revealed between the two sets of values, any more than if one were in rupees and the other in reichsmarks.

Hence some writers, in their zeal for classification, have considered the Merchandise Account as purely an Outlay and Income account. The merchandise is considered not as property but rather as a mere form of cash expenditure to be recoupt ultimately by receipts of a greater amount, the resultant being profit. A difficulty arises when we reflect that the merchandise on hand *is* property of too great value to be ignored. The way to get over this difficulty is to consider the merchandise on hand as an adjustment—an offset to the purchases.

413. Other authors again would classify this account as strictly a specific account—an asset. The difficulty here is that if we attempt to balance such an account we get a meaningless balance, corresponding to nothing. Hence the assumption is made that there is an increment of value to the extent of the profit; that the merchandise, so far as sold, has appreciated to that extent.

414. But whether the Merchandise Account be regarded as specific, or economic, or, as I contend, mixt, the calculation and the recording of the result are substantially the same. Let us take as an example, the following facts:

Merchandise on hand Jan. 1	$5,643.75
Bought during January	2,644.18
Sold during January	3,219.74
Bought during February	1,845.17
Sold during February	2,454.62
Bought during March	1,929.44
Sold during March	1,728.96

From these data let us construct an account:

MERCHANDISE.

Jan. 1	Balance.....	$5,643.75	Jan.	Sales.....	$3,219.74
"	Purchases.....	2,644.18	Feb.	"	2,454.62
Feb.	"	1,845.17	Mar.	"	1,728.96
Mar.	"	1,929.44			

But from this we can draw no conclusion. The debit side amounts to $12,062.54 and the credit side to $7,403.32, but the difference, $4,659.22, is not an asset, for that would be assuming that we have sold at cost price; and it cannot be a loss, for that would be assuming that there is no balance remaining. If we know the profit, we can ascertain the balance; if we know the balance, we can ascertain the profit.

415. The balance on hand, ascertained by inventory, is the key to the situation. Assume that it is $6,894.16. Then we compute the profit thus:

Merchandise on hand Jan. 1		$5,643.75
Bought in January	$2,644.18	
" February	1,845.17	
" March	1,929.44	
Total bought		6,418.79
Total cost		$12,062.54
But there remains *un*sold at cost.....		6,894.16
Therefore the goods sold must have cost		$5,168.38
But they produced		
in January	$3,219.74	
February	2,454.62	
March	1,728.96	
Total proceeds		7,403.32
and the profit must be		$2,234.94

416. We can now complete our account.

MERCHANDISE.

Jan. 1	Balance (Inv.)..	$5,643.75			
Jan.	Purchases.....	2,644.18	Jan.	Sales.....	$3,219.74
Feb.	"	1,845.17	Feb.	"	2,454.62
Mar.	"	1,929.44	Mar.	"	1,728.96
	Profit.....	*2,234.94*		*Balance (Inv.)*..	*6,894.16*
		$14,297.48			$14,297.48

$6,894.16 goes to the balance-sheet; $2,234.94 to the Profit and Loss Account.

417. This is the traditional form of the Merchandise Account and suffices perfectly for "balancing the books." Its defect is that it nowhere presents a clearly contrasted statement of the same goods at the two prices—in and out—and consequently the average percentage of profit could not be obtained without effort.

418. When there are goods returned, whether purchases returned by us or sales returned to us, the confusion is still greater, for each side contains some values at cost-price and some at selling price. To illustrate this, let us vary the above figures slightly, the final results being the same.

Balance January 1, as per Inventory	$5,643.75
We purchased in January	2,760.18
but returned	116.00
We sold in January	3,452.74
but had returned	233.00
We purchased in February	1,865.17
but returned	20.00
We sold in February	2,937.62
but had returned	483.00
We purchased in March	1,947.44
but returned	18.00
We sold in March	1,903.96
but had returned	175.00
Balance March 31, as per inventory	6,894.16

MERCHANDISE.

Jan. 1	Balance	$5,643.75	Jan.	Returns	$116.00
"	Purchases	2,760.18	"	Sales	3,452.74
"	Returns	233.00	Feb.	Returns	20.00
Feb.	Purchases	1,865.17	"	Sales	2,937.62
"	Returns	483.00	Mar.	Returns	18.00
Mar.	Purchases	1,947.44	"	Sales	1,903.96
"	Returns	175.00	" 31	*Balance*	*6,894.16*
" 31	*Profit*	*2,234.94*			
		$15,342.48			$15,342.48

419. It will be readily seen that the difficulty of obtaining intelligible information as to the comparativ values, in and out, is even greater here, and that to obtain such information the account would need to be taken to pieces and made over.

420. AN ACCOUNT WHICH NEEDS TO BE MADE OVER IS ONE WHICH OUGHT TO HAVE BEEN MADE DIFFERENTLY AT FIRST.

421. The modern practice is to separate the Merchandise Account into three: Merchandise, Sales, and Purchases; or at least the former two.

The above transactions would be posted as follows:

MERCHANDISE.

Jan. 1	Balance.....	$5,643.75			

PURCHASES.

Jan.	Total bought...	$2,760.18	Jan.	Total ret'd by us	$116.00
Feb.	" " ...	1,865.17	Feb.	" " " "	20.00
Mar.	" " ...	1,947.44	Mar.	" " " "	18.00

SALES.

Jan.	Total ret'd to us	$233.00	Jan.	Total sold.....	$3,452.74
Feb.	" " " "	483.00	Feb.	" "	2,937.62
Mar.	" " " "	175.00	Mar.	" "	1,903.96

Next close Purchases into Merchandise:

PURCHASES.

Jan.	Total bought...	$2,760.18	Jan.	Total ret'd by us	$116.00
Feb.	" " ...	1,865.17	Feb.	" " " "	20.00
Mar.	" " ...	1,947.44	Mar.	" " " "	18.00
					$154.00
				Net Purchases....	*6,418.7*
		$6,572.79			$6,572.79

MERCHANDISE.

Jan.	Balance.....	$5,643.75
Jan.-Mar.	Purchases....	6,418.79
		$12,062.54

In Sales Account bring down the balance.

SALES.

Jan.	Total ret'd to us. .	$233.00	Jan.	Total sold.	$3,452.74
Feb.	" " " " ..	483.00	Feb.	" "	2,937.62
Mar.	" " " " ..	175.00	Mar.	" "	1,903.96
		$891.00			
	Carried down.....	*7,403.32*			
		$8,294.32			$8,294.32
				Net Proceeds	$7,403.32

422. The cost of goods sold is now obtained by subtracting from the total of

Merchandise,	$12,062.54
the present balance,	6,894.16
cost of goods sold,	$5,168.38

423. The only two accounts remaining open are Merchandise and Sales.

Sales/Merchandise $5,168.38

Having posted this entry, the Merchandise, a pure asset account, is closed into the balance sheet; the Sales account, a pure Outlay and Income account, shows the cost and the proceeds *of the same goods,* and the difference is carried to the economic summary.

MERCHANDISE.

Jan. 1	Balance.....	$5,643.75	
Jan.-Mar.	Purchases. ...	6,418.79	
		$12,062.54	
			Jan.-Mar. Sales, at cost. $5,168.38
			Mar. 31 *Balance*. *6,894.16*
			$12,062.54

SALES.

Jan.-Mar.	Cost of goods sold.....	$5,168.38	Jan.-Mar. Net proceeds.. $7,403.32
	Profit.	*2,234.94*	
		$7,403.32	$7,403.32

THE END.

Centralized Consumption of Anthracite Coal.*

By Howard McNayr Jefferson, M. C. S.

PART I.

Centralization of Enterprise.

The extent, location and diversity of the coal supply of a country determine, in a large measure, its progress. Professor Tyndall, prior to 1866, made the following statement, which is as pertinent to-day as it was to the time in which it was written:

"I see no prospect of any substitute being found for coal as a source of motive power. We have, it is true, our winds and streams and tides; and we have the beams of the sun. But these are common to all the world. We cannot make head against a nation which, in addition to these sources of power, possesses the power of coal. We may enjoy a multitude of their physical and intellectual energy, and still be unable to hold our own against a people which possess an abundance of coal; and we should have, in my opinion, no chance whatever in a race with a nation which, in addition to abundant coal, has energy and intelligence approximately equal to our own.

"Coal stands, not beside, but entirely above all other commodities. It is the material energy of the country—the universal aid—the factor in everything we do. With coal, almost any feat is possible; without it, we are thrown back into the laborious poverty of early times."

The estimated area of the coal fields of the world is given as follows in Chisholm's Handbook of Commercial Geography:

China	200,000	square	miles
United States	192,000	"	"
Canada	65,000	"	"
India	35,000	"	"
New South Wales	24,000	"	"
Russia	20,000	"	"
United Kingdom	11,900	"	"
Spain	5,500	"	"
Japan	5,000	"	"
France	2,080	"	"
Austria-Hungary	1,790	"	"
Germany	1,770	"	"
Belgium	510	"	"
Total,	564,550	"	"

* This article was accepted by the faculty of New York University School of Commerce, Accounts and Finance in fulfillment of the thesis requirements for the degree of Master of Commercial Science.

The area credited to China is a rough estimate and probably a very low one. The figures given for the United States do not include Dakota, nor any of the Rocky Mountain nor Pacific Coast states. The figures given for Canada include only the territory east of the Rocky Mountains. The figures for Russia are exclusive of Siberia, Central Asia, and Caucasia.

The report of the United States Geological Survey for the fiscal year ending June 30, 1901, gives the following area:

Anthracite Fields (Pennsylvania).....	484	square	miles
Bituminous " 276,913	"	"	
Lignite " 113,000	"	"	
Total area,	390,397	"	"
Area exclusive of Lignite.....277,397	"	"	

Edward W. Parker, the Government's coal expert, speaking in round numbers of the area of our coal supply in a recent statement, gives 400,000 square miles as the area.

It would be very interesting to study the bituminous formations of the United States; to trace the development; to study the peculiar value of each deposit and to see what is the possibility of its future market; but my intention is to deal exclusively with anthracite, because of its proximity to New York and Philadelphia, and because the utilization of the small sizes in competition with bituminous coal is a problem. The anthracite beds, although covering but 484 square miles, all located in the State of Pennsylvania, have continuously presented peculiar features for study; and will occupy the balance of our attention. There is a small area, not exceeding eight square miles, in Colorado; but it is unimportant. The production in 1905 from the anthracite fields of Pennsylvania was 69,339,152 long tons, or about 19.77 per cent. of the total production for that year.

The anthracite region embraces a territory of about 3,300 square miles; but only 484 square miles contain workable coal measures. The area is divided into four natural divisions: the Northern, containing 176 square miles; the Eastern-Middle, containing 33 square miles; the Southern, containing 181 square miles, and the Western-Middle, containing 94 square miles.

The Northern, or Wyoming-Lackawanna basin, extends from

Forest City to Shickshinny, a distance of fifty-five miles; and includes the Wyoming and Lackawanna valleys. The maximum width is six miles. The principal cities are Scranton and Wilkes-Barre. Carbondale, Pittston, Kingston, Plymouth, and Nanticoke are important towns. Twenty-five miles northwest of this basin are a few scattering deposits. The output is included in the reports of the Northern field.

The Eastern-Middle, or Lehigh field, lies about fifteen miles south and southwest of the western end of the Northern basin. It is separated from the Northern by a mountain range and valley. It is about twenty-six miles long and ten miles wide. It lies in a very high, barren region. Hazelton is the principal city.

The Southern, or Schuylkill field, extends from Mauch Chunk on the Lehigh to Dauphin on the Susquehanna, a distance of seventy miles. Near Pottsville, it is eight miles wide; but gradually tapers both east and west; and, in the latter direction, divides itself into two narrow basins. The principal towns are Pottsville and Tamaqua.

The Western-Middle, or Mahanoy-Shamokin division lies southwest of the Eastern-Middle or Lehigh division, which it adjoins. It is thirty-six miles long and from four to five miles wide. The principal towns are Shenandoah, Mahanoy City, Ashland, Mount Carmel, and Shamokin.

The history of the development of the Anthracite industry is largely a history of the development of the transportation facilities of this region.

Up to 1890 the business was conducted on an independent basis, and a great deal of cut-throat competition prevailed. This method of conducting business was most disastrous to the small producer. Large amounts of capital were sunk in a single colliery; and, since the business of mining is hazardous, and the returns uncertain, it was quite a common thing during this period of operation to see operator after operator fail. The partially developed plants were valuable if taken hold of immediately; and, as a natural consequence, the large companies rapidly merged with theirs the operations of the smaller concerns.

In January, 1896, the anthracite carrying companies agreed upon an allotment of the tonnage produced. In 1900, the production and allotment were as follows:

Railroad	Shipments 1900	Allotment Per Cent. Agreement Jan., 1896
Delaware, Lackawanna & Western R.R....	6,013,849	13.35
Delaware & Hudson Co.....	3,973,859	9.60
Erie & Wyoming Valley R.R.....	2,090,153	4.00
Erie R.R.....	1,741,069	4.00
N. Y., Susquehanna & Western R.R.....	1,333,848	3.20
N. Y., Ontario & Western R. R.....	1,658,457	3.10
Pennsylvania R.R.....	5,169,947	11.40
Lehigh Valley R.R.....	6,909,442	15.65
Delaware, Susquehanna & Schuylkill R.R. ..	1,568,488	3.50
Central R.R. of New Jersey.....	5,309,856	11.70
Philadelphia & Reading R.R.....	9,338,516	20.50

It is interesting to note the fields of operations of these various companies. Six enter the Wyoming field. Three enter all fields. Two, all but the Northern. And one is confined to the Lehigh region. One, the Delaware, Lackawanna & Western, has the right to mine, transport, and sell coal. Its operations are mainly at Scranton and along the northern banks of the Susquehanna between Pittston and Plymouth; and also at Nanticoke, where it has a magnificent field. The Delaware and Hudson Company operates from Carbondale to Plymouth. The Erie is confined to the Wyoming and Lackawanna fields. The New York, Ontario & Western operates mainly north of Scranton. The Pennsylvania is located at Nanticoke and Glen Lyon at the extreme southern end of the Wyoming field. The Lehigh Valley penetrates all fields, and carries all its own coal, and practically all the coal mined by its tenants. The main line runs through the coal fields from Mauch Chunk to Pittston. Its "coal branches" form a perfect network over the various fields. By its purchase of the Delaware, Susquehanna & Schuylkill, in 1905, it practically controls the entire Lehigh region. The latter road is the one referred to above as confined entirely to this region. The Central Railroad of New Jersey enters the Wyoming field and penetrates the Lehigh region on the south at Audenried. The Reading is confined almost exclusively to the Schuylkill region. Its coal operating company, the Philadelphia & Reading Coal & Iron Co., is the most extensive owner of coal lands and is the largest producer.

These companies practically controlled the entire output in 1900.

A few of the reasons why consolidation of these mining operations has taken place are as follows:

First, the cost of opening a colliery, with its equipment, is a very expensive item, varying from $200,000 to $750,000, which must be returned by the time the coal is exhausted, or the investment results in a loss, as the plants are worthless when all the coal has been mined.

Another very strong tendency to consolidation is that several underground workings may be combined to furnish coal for one breaker which need not be as large comparatively as all the underground workings which have been consolidated. The savings in operating one large breaker instead of several small ones are numerous in addition to the cost of installation. The consolidation of enterprises makes it possible to construct single power plants to operate several mines. There is no objection, from an engineering standpoint, to the use of electricity on the surface, where it would be available for hauling cars, operating fans, running machinery in the shops and many other necessary operations. In a non-gaseous mine, electricity can be used with advantage for hauling cars, operating drills, cutting machines, etc.

Another and very important advantage of large operations is that it is possible to establish grades of coal which become known to the consumer by certain names; and more or less value is attached to these names by the consumers. It will be readily seen that if a colliery in a certain section happens to strike a bad vein of coal the product need not be run out on the bank or sold at a losing figure, as it can be mixed with the large output and sold without danger of ruining the reputation of that particular colliery.

Again, a colliery may have a serious accident and the owners find it necessary to spend thousands of dollars to repair the damage.

The miners may strike a very serious fault* and be com-

* FAULT.—The Century Dictionary defines a fault as follows: "A severing of the continuity of a body of rock by a break through the mass, attended by movement on one side or the other of the break, so that what were once parts of one continuous stratum are now separated. The amount of displacement of the strata thus occasioned may be a few inches or thousands of feet. Faults of a few feet are, however, the most common. Faults are occasioned by movements of the crust of the earth, and are a part of the complicated phenomena by which mountain-chains are built up, and continents elevated and depressed."

pelled to do a large amount of dead work through non-producing strata before the vein is located again.

A fire may occur in the mine, and call not only for a large expenditure of money, but also might require the services of an expert engineer to fight it.

Any one of these causes might send a small operator into bankruptcy; but where the colliery affected is but one in a large operation it can be carried along at a loss until the damage is repaired. If the trouble calls for the services of an engineer of unusual ability, he is already in the employ of the large company and is ready to throw his energies into the work without delay.

It is a safe assertion to make that not a single large company can state that all of its collieries are working up to the profitable point, and many are actually losing money.

There can scarcely be a better example of the way free competition works out its own destruction than is found in the anthracite operations of Pennsylvania. Two of the eight railways engaged in carrying the product have been in the business of mining ever since they entered the field; but the rest entered the mining business either in their own name or in the names of subsidiary companies in order to secure to themselves the necessary tonnage to keep them from going to the wall. The Reading Company, in 1871, did not own any coal lands. However, it had enjoyed a practical monopoly of the coal traffic of the Schuylkill region; but, in 1871, two much greater roads, the Pennsylvania on the west and the Lehigh Valley on the east, began to enter its territory and to compete with it for the coal tonnage. The Reading believed that it must secure the permanency of its tonnage and began to buy up all the available coal land; and, although it nearly bought itself into bankruptcy, it is now reaping the benefits of its vast ownership. The carrying roads were driven into fierce competition which they have attempted in about every conceivable way to alleviate. Some of the plans that were tried and failed during this period are as follows:

Agreed schedule of tide-water prices.

Definite division of tide-water tonnage.

Allotment of permissible output.

Curtailment of total output by general stoppage.

While these agreements were merely voluntary, they broke down after a short trial. Selling agents were naturally anxious to make money, and obtained more orders than their principals were allowed. Each company accused the other of dishonest dealing, and failure of the scheme was the result. Then, too, there were a large number of independent operators. Among these was the Pennsylvania Railroad, which carried one-ninth of the output, and who steadily refused to enter into any agreement. The Reading Company has always been a leader in these plans, and it may be said in its praise that it never violated an agreement.

In 1892, McLeod, of the Reading, conceived the idea of consolidation by lease; and succeeded, in 1893, in leasing the Central Railroad of New Jersey and the Lehigh Valley Railroad, thus securing the direct control of almost 49 per cent. of the total quantity of coal carried. The only rival to this combination was the Delaware, Lackawanna & Western Railroad, carrying about 13.16 per cent.; but this road reached only the Northern field, while the three roads combined nearly monopolized two of the fields and had a perfect network of tracks in the third. At this time the roads were buying coal from the independent operators at 55 per cent. of tide-water prices. The Reading offered 60 per cent. if the operators would sign long contracts. Before the scheme failed, they had gathered from 70 to 80 per cent. of the entire business into their hands. McLeod conceived the idea of eliminating the middleman entirely by erecting large storage plants at New York and other large cities; and he actually did erect two near the Reading mines. This scheme seemed to promise much; but the panic of 1893 was the beginning of the end. The courts declared the combination illegal and it was dissolved. A period of low prices followed, touching the lowest in 1895. Practical consolidation was again reached in 1900 and 1901. This consolidation, the modern "community of interest" idea, is the one under which the roads are now working. Under the present arrangement, the transportation companies pay the independent operators 65 per cent. of tide-water prices for all the coal they produce.

Now, since the coal fields are so closely held and controlled, let us look a little into some of the savings that may be effected in addition to those possible under a consolidation of a general

business enterprise. There are savings which may be effected in the anthracite consumption as well as in the production and financial conduct of the business.

In 1889, the State of Pennsylvania appointed a Commission to investigate the waste of coal mining with a view to the utilizing of the waste. This commission was composed of Mr. J. A. Price, Mr. Peter W. Sheafer, and Mr. Eckley B. Coxe. Both Mr. Price and Mr. Sheafer died before the completion of the report, and the vacant places were filled by Mr. Heber S. Thompson and Mr. William Griffith. The reporting commissioners were men whose word carried great weight in connection with anthracite questions. They divided the waste of coal into two great classes—that due to (a) geological deposit and formation, with which the producer must deal; and (b) commercial causes, which might be reduced by a more scientific consumption of the coal.

As to the first cause: In the first place, a very large portion of the original contents of the fields was carried away by erosion. Much of the remaining coal was rendered useless by distortion, to which the strata were subjected when upturned. In general, the percentage of marketable coal which can be obtained from any vein increases:

1st. With the smallness of the vein, down to a certain point.

2d. The nearer the seam approaches a horizontal.

3d. With the solidity of the roof; if the roof is not good it is necessary to leave large pillars.

4th. With the purity of the coal; if slate be distributed through a large vein, it may make it commercially valueless. This is really an important factor in determining the value of the small sizes obtainable from a vein.

5th. If the veins can be worked without regard to the veins above and below.

6th. If the amount of coal consumed in pumping is not excessive. It might happen that it would take more coal than a seam contained to keep the water out so that the miners could work.

There are unavoidable wastes caused by mining. Pillars must be left to support the roof. In gaseous mines, these must be extra large between the air courses. In general, between a fourth and a third of the vein must be left if surface protection is desired. It is thus never possible to remove all the coal except by stripping—that is, by removing the earth where the coal-bearing

strata come near the surface, and removing the coal in the light of day.

The avoidable waste caused by mining is a feature that present day control is reducing to a minimum. One of the largest causes of waste under less skillful mining than we have to-day was in leaving pillars too small to support the roof, which, upon falling, destroyed large quantities of coal that might have been won under better management.

A great deal of waste is caused in the preparation of the coal for market. In order to burn economically, anthracite must be broken and sorted into pieces of approximately the same size and shape; and the machinery which performs these operations must be constructed with regard to coal upon which it is employed.

The coal is dumped from the mine car into the breaker, where it passes over bars and is roughly sorted into the larger sizes. If there is a demand for the largest size, i. e., lump, the large pieces are diverted and run direct into the railroad cars. The demand for this size is comparatively limited, while the demand for domestic sizes, egg, stove, and chestnut, is much larger. The greater portion of the coal is sent between toothed rolls and broken into sizes to meet this demand. In breaking down the coal to make these domestic sizes, large quantities of small sizes, pea, buckwheat, rice, barley, and culm, are necessarily made. Very ingenious devices have been made and are in use to prepare and clean the coal for market. Years ago the slate was removed from the coal by boys and old men as it passed them in the chutes. The number of persons employed in performing this one feature of the preparation has been greatly reduced by the introduction of mechanical devices, most of which depend upon the fact that slate is heavier than the coal. The thing to be desired in preparing coal is to make as large a quantity of the large sizes with as small a proportion of small sizes as possible.

Reference will be frequently made to the different sizes of coal, and it will be well to know just what these sizes are, and, in a general way, the uses of each. Lump, the largest size marketed, passes, as it leaves the mine car, over bars placed four inches apart; and is used principally for smelting iron. Broken passes over a two and three-quarters inch square mesh, and is used for furnaces. It is known as grate in the West. Egg passes over a two-inch mesh, and, together with stove and chestnut, is a popu-

lar domestic fuel. Stove passes over a one and three-eighths inch mesh; and chestnut, over a three-quarters inch mesh. Pea, or peanut, as the term originated, is made over a one-half inch mesh. Until recently, it was used exclusively for steam purposes, but is becoming a much desired fuel for domestic consumption. It is used alone with success in furnaces and heaters, and is sometimes used with coal of larger size in furnaces to deaden the fire over night. It gives the best effect when utilized by those who understand how to handle it. Pea is the favorite coal for steamboats where a clean fuel and one that will burn with a natural draft is required. Buckwheat No. 1 is made over a one-quarter inch screen; is used largely for making steam and is gradually taking the place of pea for that purpose. Buckwheat No. 2, or rice, is made over a one-eighth inch screen and is purely a steam size. It is used to advantage in properly constructed plants where large quantities of coal are consumed. It is especially valuable for steam distributing plants, for electric light and power companies, for electric railways and kindred operations. Buckwheat No. 3, or barley, passes over a three-thirty-seconds inch mesh, and is also used for steam purposes. Its value depends largely on the construction of the furnace and the skill of the stoker, which is true of each of the small sizes. It is also utilized by brick makers to mix with clay to facilitate the burning of the brick. Culm is the coal that passes through a three-thirty-seconds inch mesh. It is not shipped to market.

One of the great problems in connection with the production and marketing of anthracite is the utilization of the small sizes, which have to come into direct competition with bituminous coal as a producer of steam. Bituminous coal is widely distributed over the country, and consequently can be sent to the consuming markets with comparatively little expense. It is used practically run-of-mine, or roughly sized, and therefore its production requires no expensive outlay for breakers, machinery, etc. It needs no blasting, and consequently the cost of production is very much lower than anthracite, where all these items are present, together with a rapidly diminishing area of coal-bearing formations, as against a practically unlimited supply of bituminous coal.

Many attempts have been made to utilize the smallest sizes of anthracite with more or less success. A number of attempts

have been made to coke it in connection with bituminous coal; and, while a technical success, the coke produced cannot compete with that produced from bituminous coking coals. Culm and small sizes are used very successfully in making steam when mixed with bituminous coal. The coal so used is principally the screenings from the yards located at the large cities. It would not pay to ship culm from the mines for such consumption. Small sizes are used at the oil refineries after mixing with the residuum of the works which is obtained by cleaning the stills after the oil has been run off. The refuse from the stills burns quickly and with intense heat which ignites the coal. Naturally the field for this sort of utilization of the culm is limited. The utilization of culm for the manufacture of artificial fuel is more of a success abroad than it is in this country. The slack of the bituminous operations or the culm of the anthracite is mixed with some binding material, such as lime, clay, cement, tar, pitch, bitumen, starch, or other glutinous material. The mixture is compressed into blocks of various sizes and burned as coal of the same size is burned. Eighty-nine patents were granted in this country from 1837 to 1892 for the manufacture of this kind of fuel. The combining articles are almost legion. Some of the plants were and are successful, and the conditions which caused them to suspend manufacture were not those incident to the value of the fuel as a means of producing heat. Efforts have been made to burn pulverized fuel as a gas, which has resulted in technical even though not practical success. The difficulty in this operation is that the coal must be reduced to an impalpable mass; and, while this would not be a difficult operation if pure anthracite were used, it is not practicable to so reduce culm, which of necessity contains large quantities of slate and other hard material.

In late years, the operators have been using the refuse from the mines to fill up old workings, by flushing the waste back into them. The chamber where the operation has been completed is first closed up and boards erected at the opening. The water, laden with the refuse, is turned into the chamber through a six-inch main. The chamber then becomes a sump basin, the refuse settles, the water runs off and is pumped to the surface. The chamber is filled in so closely by this method that the hand can hardly be placed between the top of the

refuse and the roof of the chamber. If the water runs down hill or on a level, three or four pounds of water will carry two pounds of dirt consisting of coal dust or slate. If the chamber rises from ten to one hundred feet above the level of the shaft, it takes from three to six pounds of water to carry one pound of dirt. The great saving by this method is that in the end this refuse hardens so solidly that the pillars which are now left to support the surface may be removed while the refuse will take their place. An appreciable per cent. of cost is also saved by not employing men on the banks to care for the refuse as it comes from the breakers. It releases valuable surface and saves litigation arising from pollution of the streams.

It must not be thought that the many efforts to make use of the smaller sizes and culm are because their use has been a source of discouragement to the consumer. They have been burned in large quantities with a great saving in cost of fuel. However, the furnace and the grate should be made to suit the fuel. Small sizes can be burned successfully only with a forced draft. The best results have been obtained by a combination of suction in the stack and a blowing of air in the ash-pit.

One of the recommendations of the Anthracite Waste Commission was to the effect that large factories move to the coal fields where the small sizes of coal could be bought from twenty to eighty cents per ton, and then ship their finished products. They called attention to the fact that only men and boys are employed at the mines, and that there is a large force of unemployed female labor there which could be utilized in factories. While fuel and labor are large items of cost, we must not lose sight of the fact that the raw materials must be carried to the factory and the finished goods to market. Unless the raw materials can be produced at or near the mines, or can be left there for finishing on the way to the factory, it would be better to ship coal one way than to ship goods once as raw material and again as finished product.

The supply of Pennsylvania anthracite is limited. In round figures, it will last about one hundred years. Such a peculiar deposit as this should be scientifically mined and conservatively used. It should be regarded as a national trust. It need not necessarily be operated by the Government, but at least no encouragement should be given to its exportation, and we should be allowed

to import coal if it can be obtained more cheaply from some other source than it is produced at home. As noted in the opening of this paper, there is coal in almost every country in the world. If they need the coal it would be to their benefit if they be compelled to mine it in order to get it. If coal is cheap in a country, its manufactures flourish. As for ourselves, let us use our own coal; let us transfer its latent value to some of the raw products we are exporting and get the most out of our abundance of raw materials.

Since the supply of anthracite is so limited, we must be more and more conservative in its use. This will come about as an economic development, since "Necessity is the mother of invention." We shall find new ways of burning coal so as to utilize a larger amount of the heat stored therein. We shall learn how to mine and prepare the coal even better than we do now. Smaller sizes may be used for domestic purposes than at the present time, but it is not likely that sizes below pea will ever be used very extensively for this kind of consumption. If some method could be discovered by which a greater quantity of small sizes could be consumed with profit, the burden of production would fall less heavily on the domestic sizes and so give us a domestic fuel at a less rapidly rising price. A suggestion as to how this may be accomplished will be presented in a subsequent paper.

New Jersey.

At a recent meeting of the Society of Certified Public Accountants of New Jersey a report of the delegates to the convention of The American Association of Public Accountants in St. Paul, Minn., on October 14, 15 and 16, was made by Vice-President T. Cullen Roberts, of Hoboken.

President Frank G. DuBois, who was also a delegate to the convention, and who is president of the State Board of Public Accountants, reported that there are now forty-eight experts who have received State certificates as certified public accountants in this State since the enactment of the law in 1904. Financial and business institutions now recognize the fact that qualified experts, who are certified under the laws of our State, can be relied upon.

The Society, formerly composed of Fellows only (C. P. A.'s), has decided to admit all associate members. These accountants must be in the regular employ of Certified Public Accountants, and must be recommended by Fellows of the society. This is done to inspire them to become Certified Public Accountants. Two applicants have already been admitted to associate membership.

Schemes for Currency Reform.

By Joseph French Johnson,
Dean of New York University School of Commerce.

The currency panic of October, 1907, from the evil effects of which the country has not yet recovered, has made the subject of currency reform one of first importance. It is almost certain that Congress will endeavor during its present session to improve the present currency system. It is worth while, therefore, to consider the important defects of the system and to review the plans for betterment which are likely to have the strongest support in Congress. That is the purpose of this article.

Agitation for the improvement of our currency has been under way since 1896. That year marked the culmination of a long battle over the monetary standard, the decision being in favor of gold. The question of the standard having been settled, reformers immediately began an agitation for improvement of the currency system based upon the standard. Gold is the real money in this country, yet very few exchanges are mediated by means of gold, most payments being made either with some kind of paper money or with a check. When one speaks of the evils of our currency system, reference is always to the paper money and not to the gold standard nor to the bank check.

As a result of the discussion which began in 1897, there is now a pretty general agreement on the following points:

(1) That the National Bank Note system is unsatisfactory because the circulation is not elastic, the issues of notes being governed by the prices of Government bonds, and not by the needs of business.

(2) That some change should be made in the relation between the National Treasury and the money-market in order that the collection and disbursement of federal revenues may not alternately produce contraction and inflation of the supply of currency.

Most currency reform schemes deal solely with the first point. The need of an elastic element in the currency is now generally recognized by bankers and business men, and human experience has found no means of supplying this element other than the bank note. Government credit money, such as the

greenback and the silver dollar, is incapable of expansion and contraction. Its volume is fixed by Congress and cannot be changed except by act of Congress. A bank note, however, is a piece of bank credit like the bank deposit, and if banks were as free to issue notes as they are to extend their deposit liabilities, the volume of notes in circulation would always expand and contract with the business needs of the community, just as does the volume of checks at the present time.

The elasticity of bank currency has been proven by experience in this and other countries. In Canada, for example, banks expand their note credits with almost as much freedom as they do their deposit credits. If a customer borrows $10,000 of a Canadian bank, the bank can, with equal ease, give him $10,000 in notes or a deposit account for $10,000. Whichever the customer desires the bank grants, and in either case its liabilities are the same. If it gives notes it makes due preparation to redeem the notes as they are presented to the clearing house; if it gives a deposit account, it makes the same preparation to take care of checks. In order to protect innocent holders of notes and to give them general currency throughout the Dominion, the law provides for the maintenance of a 5 per cent. guaranty fund and for the redemption of all notes in at least one city of each Province. The law also limits the issue of notes to the paid-in capital of the bank. This system has been in operation in Canada nearly twenty years, and no bank note has yet gone unredeemed. During these years Canada has never suffered from currency stringency. In the fall, when the need for currency is largest, the total circulation of Canadian banks is some $20,000,000 greater than in the spring. Canada now has thirty-five banks with over 1,000 branches. The minimum capital of a Canadian bank is $500,000. The total capital of Canada's thirty-five banks, not including surplus, is now nearly $100,000,000.

The best illustration of such a system of bank note issue afforded by the United States was the old Suffolk Banking system in operation in New England from 1820 to 1861. Under this system Boston was the redemption center for all note-issuing banks in New England, and on account of the daily redemption in that city the total circulation of New England banks never rose above the amount actually needed by the people, being large in busy seasons and small in dull seasons. Bank notes were not

secured by any deposit of collateral, yet the losses from bank failures in New England under the operation of this system were less than in those States where a deposit of collateral security was required.

It is not necessary for me to make a detailed argument for the bank note based upon the general assets of the bank. This subject has been thoroughly threshed out in recent years, and the argument needs no restatement at the present time. Practically all students of banking are agreed that under proper conditions banks can safely be permitted to issue notes secured only by their general assets. It is also agreed that a circulation thus obtained is more elastic and satisfactory than any other can be. People who deny these two propositions, it is morally certain, have never made a careful study of either banking theory or banking experience.

But when it is proposed to introduce asset currency into the United States, there exist some very reasonable grounds for differences of opinion. In this country there are over six thousand National banks now issuing notes secured by deposit of Government bonds with the Treasurer of the United States. These notes now amount to about $700,000,000. There is also in existence over $300,000,000 of United States notes, nearly $500,000,000 of silver certificates and about $750,000,000 of gold certificates. Can we safely graft upon this complex currency system a bank note circulation based solely upon the assets of banks? A man may thoroughly believe in the superiority of the Canadian and Suffolk banking systems, and yet, without inconsistency, answer that question in the negative. If this were a new country and a banking system were about to be introduced, the Canadian system might safely and wisely be copied, but under existing conditions I fear that any attempt to introduce such a system, or anything similar to it, would be fraught with great peril.

In order to make my position clear I call especial attention to the truth of the two following propositions:

First, no bank currency can be elastic unless the limit of possible issue exceeds the maximum demand for currency.

Second, no country can have a really elastic bank currency so long as any "lawful" paper money of the same denominations is in circulation.

I call attention to these two propositions because they are of

decisive importance, and yet have been quite commonly ignored in the discussion of the subject. With regard to the first, it must be evident to the most casual student that a banking circulation must cease to possess elasticity the moment the banks have put forth all the notes the law permits. For example, Canadian banks have never yet quite reached the limit. As a result, when a Canadian bank takes in the notes of other banks it is under the strongest possible inducement not to hold them for use as counter money, but to send them home for redemption. Thereby it increases its reserve of lawful money and is enabled to use its own bank notes as counter money. But if all of its own notes were in circulation, not only would it be unable to respond to any increased demand for currency, but it would also be willing to use the notes of other banks as counter money, so that the circulation as a whole would fail on the side of contraction as well as on the side of expansion.[1]

Evidently then, any scheme for the issue of bank notes in the United States which fixes a limit that can be readily attained by the issuing banks would fail to furnish an elastic currency. It would simply result in an increased issue of bank notes, from which the country would derive no benefit.

The truth of the second proposition may perhaps not be seen so easily without illustration. It means this: If our National banks are to be given the right to issue notes more freely than at present, whether secured by divers kinds of bonds or by the general assets of the banks, no elasticity will result so long as any other forms of paper money remain in circulation among the people. November 30, 1907, there were in circulation the following amounts of Government paper money:

Gold Certificates	$747,000,000
Silver Certificates	472,000,000
United States Notes and Treasury Notes	350,000,000
Total	$1,569,000,000

[1] Here we have one of the weaknesses of our own banking circulation. As soon as our National banks get into circulation all the notes which have been issued to them against bonds deposited—and usually that is easily accomplished—they begin at once to treat the notes of other banks as part of their cash and to pay them out indiscriminately together with greenbacks and silver certificates.

At this time the reserves of National banks amounted to above $700,000,000, of which probably $250,000,000 was in the form of gold coin and bullion, and $450,000,000 in gold certificates and legal tenders. It follows, therefore, that about $1,100,000,000 of Government paper money was in circulation outside of the National banks. Of this amount $170,000,000 was in one and two-dollar bills and could not be replaced by bank notes if the lowest denomination of these was five dollars. We may conclude, however, that there is now in use among the people of the United States at least $900,000,000 of paper money, all of it lawful or reserve money, and doing work which can be done equally well by bank notes. It is in people's pockets, in the tills of shopkeepers and in the vaults of State banking institutions. I wish to make it clear that no scheme providing for a more liberal issue of notes by National banks can result in elasticity until bank notes have taken the place in our circulation of all this $900,000,000 of paper money.

Let us by way of illustration examine the measure recommended to Congress by the American Bankers' Association. In this measure it was proposed that National banks be authorized to issue unsecured notes to the extent of 40 per cent. of their bond secured circulation, said notes to be taxed at the rate of 2½ per cent.; also to issue an emergency circulation equal to 12½ per cent. of their capital, taxed at the rate of 5 or 6 per cent. per annum. It was also proposed that convenient redemption agencies should be maintained throughout the country, so that in general no bank should be more than twenty-four hours distant from a redemption center. Now the present capitalization of National banks is about $900,000,000. We may fairly assume that it would be $1,000,000,000 within a year or two after a measure of this sort shall have taken effect. As the measure provides that the total circulation of a bank shall not exceed its capital stock, it is evident that with such a law in force at the present time the National banking circulation could be only $300,000,000 larger than it is now. Indeed, the advocates of the measure do not contemplate any such increase of the circulation. They hold that on account of the ease with which redemption could be obtained the volume of bank notes could not be increased unless there was an actual increase in the demand for hand-to-hand money. In this view, it seems to me, they are mistaken.

It must be admitted that a bank having on hand a supply of its own notes will always pay them out in preference to other forms of currency. As greenbacks and other forms of lawful money flow into such a bank, they will certainly be added to its reserve, while the cash payments will be made in the notes of the bank. It follows, therefore, that if the National banks of the country had on hand $300,000,000 in their own bank notes a constant stream of fresh bank notes would be going into circulation and an equally large flow of lawful money would be disappearing from circulation into the reserve vaults of the banks. The fact that redemption was made easy would not stop this substitution of bank notes for reserve money. It would simply make the process of substitution a little slower than it otherwise would be, but the process itself would go on until finally each bank had got into circulation all its authorized issue and was holding in its stead an equivalent amount of lawful money. The net result, therefore, would be merely the substitution in the country's circulating medium of $300,000,000 in bank notes for $300,000,000 in lawful money, and a corresponding increase in the banking reserves of the country. Such an increase of banking reserves, unless brought about during a period of extraordinary increase in the need for money, would evidently mean inflation, an artificial stimulus to prices, and a large export movement of gold. And at the end, after the banks had issued notes to the authorized limit, the currency would be practically as inelastic as it was at the beginning, for each bank would have put into circulation all its authorized issue and would be powerless to respond to any increased demand for currency.

If I am right in this conclusion, it follows that no plan for the issue of bank notes by National banks can add an elastic element to the currency unless it provides for the easy issue of over $900,000,000 of bank notes, and it could not be in effective operation until bank notes had taken the place in the country's circulating medium of about $900,000,000 of lawful money. After all that amount of Government credit money—U. S. notes, gold certificates, and silver certificates—had been displaced by bank notes, then further issues of bank notes would be impossible unless there were an actual increase in the need for currency.

We should then have a really elastic currency, and with the exception of one and two-dollar bills, it would consist entirely

of bank notes. But this end, desirable as it is, cannot be reached except by a most perilous path. Evidently, if our banks are to substitute bank notes for the lawful money now doing service as pocket and till money, the reserves of the banks must absorb some $900,000,000 of lawful money during the process. This would mean a doubling of the lawful money reserves of our National banks and a possible doubling of discounts and deposits. Such an expansion of credit would almost certainly bring on an outflow of gold that might cause great alarm among business men and would certainly prove a serious strain upon the resources of our National Treasury.

The real objection, then, to asset currency in the United States, does not lie in the nature of such currency, but in the peril which, under existing conditions, must attend its introduction. The United States has never had better currency of any kind than that supplied before the Civil War by the banks of New England, and no country now has better currency than that supplied by the banks of Canada. Yet when we analyze any scheme proposing that our National banks be permitted to furnish us similar currency in this country, we are brought immediately face to face with the difficulties and perils of transition. The real question is, not what is a good system of bank note issue, but how can we pass from our present bad system to one that is good?

Having in mind these difficulties and dangers the Special Currency Committee of the Chamber of Commerce in the Report made in November, 1906, most strongly recommended the establishment of a Central Bank of Issue, under Government control, believing that such an institution, since it would be responsible for the redemption of all Government credit-money, might safely be charged with the duty of satisfying the fluctuating currency needs of the country. The committee, however, did not feel confident that the recommendation would receive immediate favor in Congress, and hence suggested an alternative measure, which might afford temporary relief. This measure provides for an unsecured issue of notes by National banks subject to a graduated tax ranging from 2 to 6 per cent., the tax rate rising as the volume of notes issued by a bank increased. As I have already pointed out, if our currency system were saturated with bank notes, no tax would ever be necessary to compel the homing of notes when their work was done, but when a bank note can easily take the

place of a greenback, silver certificate or gold certificate, as is now the case, an artificial device to secure contraction is certainly necessary. It is doubtful, however, if the graduated tax would prove a satisfactory or effective device for this purpose. Many banks would certainly issue the 2 per cent. currency in ordinary times, while others would keep 3 or 4 per cent. currency constantly in circulation, so that the capacity for expansion in September, when the crop moving demand begins to be felt, would be much less than it ought to be. Nevertheless, this graduated tax plan, artificial and unnatural as it undoubtedly is, seems to me the most prudent measure which has yet been suggested for the introduction of an elastic element into our National banking circulation. It is a plan which Congress might safely venture to put into operation during a period of prosperity, rising prices and increasing demand for currency. I believe it would be unwise, however, to try such a scheme at the present time. The country appears to be entering upon an era of mercantile and industrial quietude, the need for currency being likely to decrease rather than to increase. Furthermore, our monetary circulation during the last few months has been swollen to the extent of $200,000,000, part gold and part bank notes, and it is to be expected, if not feared, that a large outflow of gold will soon take place. With our currency in this redundant condition and with uncertainty prevailing as to the future, it would be unwise to enact any law that would render possible the slightest degree of inflation.

The measures providing for an issue of emergency currency belong in a class by themselves. Such measures do not aim to furnish an elastic currency, one that shall expand in the autumn and contract in the spring, but merely provide for an increased issue of currency in periods of financial stress. In order that the notes may be retired as soon as the stress is over, they are made subject to a tax of 5 or 6 per cent. Senator Aldrich has recently introduced an emergency currency bill which, according to reports from Washington, is the only measure having any chance of enactment at the present session. It provides for a maximum issue by National banks of $250,000,000 of notes taxed at the rate of 6 per cent. and secured by a deposit of municipal or other gilt-edged bonds. The enactment of this bill would almost certainly make the situation worse than it is now. During the panics

of 1893 and 1907 the banks of the country made free use of emergency currency. Experience has proved that clearing house certificates backed by commercial assets of banks can safely be relied upon to satisfy the local need for currency in times of panic. It may be well to place a legal sanction on this kind of currency, but it is impossible to see why anything more should be attempted. As for Senator Aldrich's bill, if one of its effects shall be to prevent the issue of clearing house currency, such as the country used in November and December of 1907, it would leave the banks in a worse plight than they are now. Commercial banks do not make a practice of owning bonds of any kind. These are fixed assets and have no place on the ledger of a commercial bank. If Senator Aldrich's bill should become a law, only a small number of the National banks of this country would be in a position to avail themselves of its privileges. At the very time when merchants most needed help, such a law would tend to draw the liquid capital of the country away from business into various forms of long-time investment. It is difficult to believe that a measure so impotent and so unsound in principle will receive the approval of Congress.

It should be clearly understood that from the issue of a highly taxed emergency currency nothing can be expected until after a panic is under way, for banks will not issue such currency until panic conditions prevail. Advocates of this kind of currency have no right to cite the Bank of Germany as an illustration of its advantages. The capital stock of that institution is owned by private citizens, but it is managed by officers appointed by the Government, and these officers are not stockholders. Under its charter the bank is permitted to issue emergency currency taxed 5 per cent., and such currency it has frequently issued in periods of stringency not serious in character, thus quickly relieving a tense situation. The governors of the bank give little thought to the question of profit. It is their duty, in so far as possible, to protect the financial and commercial interests of Germany, and if in their opinion a larger circulation of notes is needed, more notes are put forth without regard to the probable effect upon stockholders' dividends. Indeed, the Reichsbank has exceeded the regular limit of note issue at times when the rate of interest in Berlin was less than 5 per cent. We could not expect that any such broad policy or patriotic motives would regulate the issu-

ance of emergency currency by the National banks of this country. If the tax were fixed at 6 per cent., it is doubtful if any bank would put such notes into circulation unless the managers felt pretty certain that the discount rate was to stand at 8 per cent. or higher for some time. An advance in the call loan rate for money would not be sufficient to warrant the issue of a highly taxed emergency currency, for the call loan rate is notoriously unstable.

If, therefore, Congress is to do no more at this session than to provide for an issue of emergency notes, the fact should be generally recognized that no real and final improvement of our currency system has been attempted, for it would be a calamity if the vital question of currency reform should, by the enactment of such a measure, be laid on the shelf. Furthermore, if the measure is to possess palliative potency in time of panic, it must give the banks authority to issue taxed notes the moment they are needed. In my judgment, such notes would be entirely safe, and the Government could safely undertake their redemption, even though they were buttressed by no deposit of collateral. If no bank were permitted to issue these notes except with the approval of the Secretary of the Treasury and the Comptroller of the Treasury—officials who have abundant means of ascertaining the exact condition of every National bank in the country—it is most unlikely that there would be any default. Even if a panic swept away some of the banks which had issued emergency circulation, the Government would be amply protected by its lien upon the assets and by the safety fund created by the tax. However, if the so-called conservative men in Congress cannot be persuaded to indorse the emergency issue of unsecured notes, let the required security consist of the ordinary assets of commercial banks. If, furthermore, the law require that the security be approved and guaranteed by some responsible clearing house, then the possibility of loss through issue of emergency notes would be practically zero.

There remains to be noticed one other plan for the amendment of the National banking system of note-issue. It deserves notice because it has many advocates among bankers throughout the country and because it is the most defective and vicious scheme which has any large numbers of supporters. This plan proposes that National banks shall be permitted to issue notes

secured by bonds other than Government. Its advocates apparently think that the defects of our National banking circulation are due entirely to the scarcity of Government bonds. What they seem to aim at is a larger circulation rather than a more elastic circulation.

It can easily be seen that the scarcity of Government bonds has nothing whatever to do with the inelasticity of our currency. If the National debt were three times its present amount, our National banking circulation would doubtless be larger than now, but it would not be a bit more elastic. The true nature of the National bank note is not commonly understood. It is really a sort of back door greenback. With the exception of the silver certificates and treasury notes of 1890, the United States has nominally issued no paper money since the Civil War, yet in reality it has issued paper money every time it has negotiated an issue of Government bonds. The National bank note is merely a Government bond made payable to bearer and stripped of its interest. Practically the only limit to the issue of the notes is the amount of available Government bonds. If the law should also permit the issue of notes against certain railway and municipal bonds, there would be no limit to the amount of notes which might be issued, and the circulation would increase until every other form of paper money had been eliminated. Inflation of this kind would drive gold from the country in large quantities and doubtless cause much apprehension if not panic.

If I am right in my analysis of the various schemes for the improvement of our National banking circulation, we are forced to the conclusion that none can safely be tried unless the greenbacks and silver dollars are either retired or "demonetized." Popular disapproval would doubtless block any attempt at the retirement of outstanding Government credit money. Its partial demonetization however is feasible, for that could be accomplished by the simple requirement that the reserves of National banks shall consist of gold either entirely or to the extent of 90 per cent. If such a law were enacted, at least $200,000,000 in gold certificates would be drawn into banking reserves to take the place of greenbacks and silver. Even then about $300,000,000 in gold certificates would remain in circulation among the people, displaceable by bank notes.

It is by no means certain, indeed, that bank notes would not

displace greenbacks and silver certificates even though these could no longer be counted in bank reserves. Since they would be exchangeable for gold at the United States Treasury, a bank would naturally regard them as the equivalent of reserve money and hence would not be likely to pay them out so long as the stock of its own notes was unexhausted.

There is, therefore, only one means of escape from our currency dilemma, and that is a Central Bank of Issue under Government control. We are forced to the conclusion that the Central Bank of Issue is not only the best but really the most practicable solution of our currency problem. Such a bank would be an arm of the Federal treasury and the various forms of Government credit money now in circulation would figure among its liabilities exactly as would its own notes. It could not inflate the currency without immediate payment of the penalty, for the resultant export demand for gold would be directed against its own reserve.

Corporate Management Compared With Government Control.*

By Elijah W. Sells, C. P. A.

President of The American Association of Public Accountants.

Mr. Toastmaster, President, Members of The Society of Certified Public Accountants of the State of New Jersey, and Guests:

To be thought worthy of being asked to respond to a toast to "The American Association of Public Accountants" is highly appreciated. That Association in turn extends to you its hearty congratulations upon the attainment of your tenth anniversary, and wishes for you, in the years to come, all prosperity, and that the highest standard in the development of your young profession may be realized in the membership of your Society. Your President, who has been on the Executive Committee of the American Association during the past year, and your Vice-President, who is the Secretary, are both well informed respecting the affairs of the American Association, and have doubtless kept you well informed. I need not, therefore, talk to you about it.

The Society of Certified Public Accountants of the State of New Jersey occupies a prominent position in the American Association. It is the third largest Society, and it is especially conspicuous because more corporations and more corporate capital have their corporate home in the State of New Jersey than in any other State. And so I want to take this occasion to discuss with you, and in a spirit that shall lack neither candor nor courage, certain public questions upon which the experience of a public accountant is competent to throw light, although rather serious for such a gathering as this.

The position of the public accountant in respect to corporations and their management is always an independent one. Unlike the attorney he is not expected to make out a case. The character of the service he renders is impersonal. All he can do

* Remarks at the anniversary dinner of the Society of Certified Public Accountants of the State of New Jersey, January 20, 1908.

is to tell what the facts are, and they exist for his examination in forms so tangible and so subject to other scrutiny than his own that even if he were willing to prostitute his calling he would never dare to do so. It is equally true that the knowledge he obtains of the affairs of corporations is necessarily intimate, accurate, and substantially complete.

Our country just now is passing through a period of acute financial stringency. The securities representing its properties are selling at prices that range from 30 to 60 per cent. lower than were obtained for them one year ago. The money needed to keep business going is harder to get to-day than was any sum, however great, for the extension and development of business one year ago, and the questions, What is the matter? How has this come about? Who is responsible? are on everybody's tongue. The answers that are so generously provided seem to me very wide of the mark. Usually they involve grave reflections upon corporate management, and usually they come from a class of people who are particularly glib with their tongue or ready with their pen, and who seem to have no other qualification for throwing light upon so grave a problem. We are told that the corporation managers are dishonest; that they "exploit" the people and their utilities; that they put their own enrichment above their duty to the stockholding interest or to the patronizing public; and that before there can be a return of the splendid prosperity we were enjoying, the Corporation must be regulated and the Government must step in with a sharp eye and a big stick.

My experience in the conduct of independent and impartial examinations of books of account and affairs has covered many years and has been concerned with the Federal Government, State Governments, and City Governments. It has covered the field also of railway, street railway, light, power, and other public service corporations. It has dealt with industrial corporations, the so-called "trusts." It has taken me into banks, trust companies, and insurance companies; into educational and charitable institutions. I think I may say it has taken me pretty generally over the whole field of public and private business, and if I am to judge by what my eyes have seen, it is the unassailable truth that almost any one of the men who stand at the head of our great business institutions is far more competent to run the Government, and would run it more economically, more wisely, and more

honestly, than any of those who are in the business of running governments.

I know as a matter of fact that the management of our great properties is generally intelligent and economical, and that the management of our Government bureaus is generally loose, irregular, and frequently dishonest; and when I read the articles with which so many of our newspapers and magazines are filled nowadays, reflecting on the men whose genius is developing the country's resources, and when I hear the proposals of politicians, from the most eminent to the least, for the passage of laws to hamper and restrict the energies of these men on the theory that their integrity is open to suspicion, my mind inevitably brings up the contrast that I always observe between a corporation's way of doing things and a government's, as disclosed by their respective records and books of account.

For the purpose of this comparison, incompetency and dishonesty need not be separated. Putting them together it is my deliberate estimate, that, judged by the highest standards prevailing in the best conducted corporations, there is less than 10 per cent. of both among men in the management of corporations generally, and at least 90 per cent. of both among public office holders, and I base this estimate upon my experience as a public accountant.

The men intrusted with the management of the corporations are better fitted to administer the affairs of such corporations and to exercise judgment in matters concerning both the investor and the public which takes their product or utilizes their franchises, than are those men who hold public office qualified to fill even their own positions, much less to undertake administrative control over corporations. The facts that prove this do not deal with the mere matter of honesty and efficiency. The organization of a public bureau is much less compact, much less harmonious in its operation, than the organization of a great railway or a great industrial corporation. The men at the head of such business organizations, in practically every case, are experts, working diligently, in harmony, and ready to work to the limit of their endurance, with full and direct control of their subordinates. On the other hand, nothing can be more notorious (the results are obvious to every public accountant who investigates) than the fact that in nine cases out of ten the head of a public department

spends most of his time promoting his political interests, and the employees generally, protected by the civil service regulations, are looking to see how little rather than how much work they can get into their appointed short hours.

We are not without information of the effects upon great business industries of being hampered by government regulation, as compared with the effect of being let alone. It is rare, of course, that conditions common to a great business are due to a single cause, but in this instance the signs point that way. The two greatest business interests of the country are represented by the railways and by agriculture, and they are particularly interrelated. Everything that tends to restrain capital from investing in railway enterprises; everything that holds back the extension of railway enterprises into new and undeveloped country, checks the settlement of new farms and the production of new crops. The manufacturer on the other hand finds his interests facilitated by the erection of his factories and shops in old and closely settled communities where the transportation problem is already fully solved. So, note the comparison.

In addition to a vast amount of State legislation in restraint of railways that began at about the time the Interstate Commerce Act was passed in 1887, that evil enactment, with its subsequent amendments, ushered in the era of restriction and introduced the period of railway persecution by law. Prior to that time railway construction had progressed in line with the development of business generally, but since that day, notwithstanding the enormous increase of capital resources, the railway industry has fallen far below other lines of development, and with it also has fallen the principal agricultural interests.

From 1878 to 1887 the average number of miles of railways constructed per annum was 7,013, but in the ten years following the passage of this Act, the average was only 3,537, or a falling off of about 50 per cent. A normal growth since 1887, to keep pace with the development of industries generally, should show an average in excess of that which had distinguished the earlier period. No less than 12,876 miles of railway were constructed in the very year, 1887, in which the Interstate Commerce Act was passed; since that time the largest year of construction was in the year following, 1888, when the total was only 6,900 miles. The total mileage at the end of 1887 was 149,214; at the close of 1906

the total mileage was 222,635, an increase during these nineteen years of only 49 per cent., while in the preceding nineteen years the increase had been 253 per cent.

The explanation of this condition of things is not to be found in the suggestion that the country has been occupied. In the region west of the Mississippi, as suitable for development as any country through which any of the trans-continental lines were built, there were in 1904, outside of Alaska and Texas, no fewer than 473,836,000 acres of unoccupied public lands, while in Texas one-half of the area, or fully 84,000,000 acres, has not yet been penetrated by lines of railway. In the region west of the Mississippi where there is only a little over 100,000 miles of road, there is an area at the present time sufficient to support at least 50 per cent. more railway mileage.

Note now the figures showing the development of businesses which have not been hampered by that sort of government regulation which hinders their management and frightens their investors. National and State bank deposits increased from $1,737,000,000 in 1888 to $6,941,000,000 in 1906, or in the enormous measure of 299 per cent.; bank clearings increased from $49,098,000,000 to $159,808,000,000, or 225 per cent.; and the production of pig iron from 7,000,000 tons to 28,000,000 tons, or 289 per cent. The Lake Superior iron ore shipments increased from 9,000,000 tons in 1890 to 38,000,000 tons in 1906, or 324 per cent. The statistics of manufactures for the period from 1888 to 1906 are not available, but for the ten years from 1890 to 1900 the capital invested in manufactures had increased from $6,525,000,000 to $9,835,000,000, or 50 per cent.; but the capital invested in railways had increased during those ten years from $10,021,000,000 to $11,892,000,000, or only in the measure of 18 per cent., with a mileage in the measure of 16 per cent.

The fact that the causes, whatever they are, which have throttled railway development, are also responsible for holding back the development of agriculture appears clearly enough in the fact that agriculture is the only other large industry which has not developed in proportion with the production of raw material, the growth of manufactures, and the increase of banking resources. Since the time when the Egyptian people began the system of rotating crops, agriculture has been the greatest source of national enrichment, and doubtless the greatest factor in the

civilization of the world. With all the lands that are available in this country still to be reached by railway construction, and with unlimited markets abroad for our agricultural products, the production of corn, wheat, and cotton increased not at all in keeping with other developments, but only approximately with the progress of railway development. In the period from 1888 to 1906, the increase in the production of corn was from 1,988,000,000 bushels to 2,927,000,000 bushels, or only 47 per cent.; that of wheat was from 416,000,000 bushels to 735,000,000 bushels, or only 77 per cent.; while that of cotton was from 6,941,000 bales to 13,290,000 bales, or only 91 per cent.; and the fact that cotton did better than wheat or corn is accounted for by the reinvigoration of the South.

It is interesting also to note that the revenue to the investor from his interests in railways is far less than his revenue from an interest in manufactures. The average rate of net income on railway investments is only about 4 per cent., while the average net income from investments in manufactures is about 15 per cent.

I want to quote, and with earnest approval, the language employed by President Hadley of Yale University, in a lecture on "Ethics of Corporation Management," delivered in the latter part of 1906:

> "Personally, I am one of those who look with serious distrust on each extension of political activity. I believe that the Interstate Commerce Law did more to prevent wise railroad regulation than any other event in the history of the country. I think that the Courts would have dealt with our industrial problems better than they have done if the Anti-Trust Act had never been passed. I have gravely doubted the wisdom of some of the more recent measures passed by the National Government."

Christian Socialism, the equal protection of the individual rights of all, the doctrine of the Golden Rule, is the only sort of socialism that should exist in a free country where each man's endowment of industry and ability should be permitted to achieve for him that full measure of success of which it is capable.

The prejudice that has been aroused against the men who have written their names largest upon the geography of their country by railway construction and development, or whose genius has built up such corporate organizations as exist in steel, in oil, in the telegraph, and in other lines of industry; the prejudice that swept over the West in the days of Populism, and that now seems

so far to dictate the policies of both the great political parties that their old-time controversies are forgotten and they are merged in attacks upon the business of the country, is a prejudice that is based upon two false assumptions: first, that the men of great affairs are lacking in integrity, and, second, that the men of small affairs are oversupplied with it. I shall not say that the reverse is more nearly true, but I do say that almost every instance of great success in this country is an example of a combination, in the man who has accomplished it, of scrupulous honesty, great frugality of personal expenditure during the years of struggle, and unbounded industry; while as a commentary upon general good conduct of the masses as such, it is a pertinent remark that if during the last few years one of our largest street railway systems could have gathered into its treasury all the fares that were passed up to its conductors, together with all the fares for which it gave rides but for which the passengers had contrived to omit to pay, it would not now be in the hands of receivers.

The loss to traction lines in all principal cities by the evasion and the dodging of passengers, and by the misconduct of conductors, is estimated at from 5 to 10 per cent. of their gross earnings. The aggregate loss to shareholders of traction companies throughout the country must amount to a great many millions of dollars annually.

Now, gentlemen, a few words more about The American Association. That Association voted at its last meeting to accept the invitation of The Pennsylvania Institute of Certified Public Accountants to hold its next annual meeting at Atlantic City, in this State, in October. It is understood that the Certified Public Accountants of the State of New Jersey and The New York State Society of Certified Public Accountants are to join with The Pennsylvania Institute of Certified Public Accountants in making the strongest host The American Association of Public Accountants, or, indeed any other gathering of public accountants in this country, has ever had. The Committee on Annual Meeting 1908 is very much alive to the needs of that occasion, and is already actively engaged in plans that promise much for our enlightenment and entertainment.

I thank you for your attention.

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EDITOR
JOSEPH FRENCH JOHNSON

ASSOCIATE EDITOR
W. H. LOUGH, JR.

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EDITORIAL.

Life Insurance and Valuations.

The life insurance companies have during the recent financial disturbances been much exercised in regard to the valuation of their bonds, or fixed-term securities, in which a large part of their funds is invested. They are opening their eyes to the false and unphilosophical system which has been carelessly followed in the past, and it is believed that a scientific and logical method will be introduced. The companies are especially in a hard position from the fact that they are subject to the supervision of as many insurance commissioners as there are States in the Union, to say nothing of their foreign business. These officials must pass upon the solvency of the companies: that is, whether the assets which they hold are sufficient to meet in due time the liabilities for which they have pledged themselves, and which mature as deaths occur. As these officials, guided by their State laws and their own judgment, may greatly differ, it is possible for a company to be pronounced insolvent in some states and entirely solvent in others: a case analogous to that result of our dual system of government whereby a man who is single in Dakota is married in New Jersey, or sane while in Virginia, but insane as soon as he comes into New York. To add to the perplexity of the case, it may be said with

moderation that not every one of the gentlemen in office is a trained insurance expert and accountant.

The trouble arises from setting up an absolutely false and unreliable standard of solvency, one based upon guess rather than upon facts, the so-called market value of securities having a fixed term and a fixed rate of interest.

If you had a contract with an employee to work for you for ten years at $1,000 a year, would you consider the expense as only $800, because you know a man who would work for that? This would be the same kind, of absurdity involved in supposing that a bond which will certainly pay you 4 per cent. for thirty years to come has shrunk in its value to you because, through the result of circumstances, you could now buy it at a price which would pay 6 per cent.

There are two different causes working to shift the values of term securities up and down. The first is the efflux of time, by which the value approaches nearer and nearer to par as the principal comes nearer to maturity. The second cause is fluctuation in the force of interest, whether especially as to the particular form of investment or a general, universal rise or fall. The resultant of the time factor combined with the entering cost is a regular curve, mathematically ascertainable, passing from original cost at the time of making the investment to par at maturity. Those are facts, and from them can be deduced the exact corresponding value at any point. The aberrations caused by the shifting rate of interest transform the curve into an irregular series of sinuosities, now above and now below the line of the curve, but really governed by it. As the point of rest is approached, the oscillation diminishes and the normal line of the curve becomes predominant.

If all the securities of a company were at par and bore 4 per cent. interest, there being no doubt of punctual payment of interest and principal, and the premiums on the policies were adjusted on a 4 per cent. basis—allowing for expenses—can there be any question that this company would at every moment be solvent; that is, in position to pay every claim as it matured? How could the ups and downs of the Stock Exchange dealings in that kind of security (even supposing them always bona fide) possibly affect the fact that the company will have a dollar in hand every time it has to meet a dollar of liability?

This is of course an ideal hypothesis; but the principle is true that to the company purchasing the security at a price which makes it yield a certain rate of interest, that *is* the rate, which can not be varied except by actually selling.

Buying a security above or below par is merely discounting a number of future cash payments. Let us discard the idea of a distinction between interest-cash and principal-cash, for it all looks alike. A ten year 6 per cent. bond for $1,000 is the right to receive twenty sums of $30 each at intervals of six months and the further right to receive a lump sum of $1,000 at the end of the tenth year; or we might say, nineteen sums of $30 and one sum of $1,030. To buy this bond you must discount these payments at some rate or other; none of the $30 payments is worth $30 now; the $1,000 payment is not now worth $1,000. If the rate of discount is exactly 6 per cent., the sum of all the sums receivable will be just $1,000. But if the rate of discount differs at all from 6 per cent., then the price of the bond differs from par. We must then discard the idea of the $30 payments being payments of interest. As each of these matures, if the rate of discount is 4 per cent. the $30 is partly the original discounted value and partly interest thereon at 4 per cent.

If the rate of assured income is sufficient together with the insurance premiums to make good the face of each policy at maturity, the company is solvent, irrespective of the fact that a profit or a loss *would* be made by liquidating on the last day of December, in the current year.

It is surprising that the insurance companies ever allowed their assets of this kind to be rated otherwise than on the basis of the productive rate which was established by the purchase of them. With their skilled mathematicians in the actuarial department, who have elaborately computed their chief liability, that is, the "reserve" necessary to be maintained, it would seem as though equal accuracy should have been attained on the other side of the balance sheet.

Mr. John Tatlock, an eminent actuary and now president of the Washington Life, recently read an able and interesting paper on this subject, in which he pointed out this peculiarity of the actuaries. Presumably they have not cared to trespass on the province of the treasurer; but in reality the treasurer ought to be

enough of an actuary to handle such a problem or else call upon the actuarial department for its help.

We believe that, if the question of valuation had been submitted to a jury of professional accountants, it would have been worked to the proper solution.

Mr. Tatlock considers that the market-value method, which has become traditional since State supervision of insurance was first introduced in New York and Massachusetts, was adopted from a false analogy with a banking concern, " whose liabilities are practically immediate; it is required, from the nature of its business, to provide for possible liquidation within a short space of time. The liabilities of a life company, on the other hand, are provided by contract to mature over a period of a long term of years; the amount of liabilities requiring settlement within a given period, or at a given time, can be determined in advance with a high degree of accuracy, and good management can, and does provide that assets are in hand when needed, irrespective of the ups and downs of market trading in such assets in the meantime."

Besides the mental confusion which Mr. Tatlock thus points out there is another cause. Without clearly perceiving that there are two separate forces at work as stated above, there was an obscure feeling that the value always fell or rose from original cost to par at maturity, and the conclusion was jumped at that its track followed the serpentine windings of market value through whose convolutions one could not discern the ideal curve which it would have followed but for the vagaries of interest-rate.

In this last year-end when the market did not exist and market values had disappeared, the life companies were in a sad plight. Having prepared thoroughly to meet all liabilities, they were still in danger of insolvency on paper. Something had to be done. Grotesque plans were suggested; to value everything on a 4 per cent. basis, irrespective of truth; to consider the market of 1907 to be like that of 1906, though everyone knew it was not: to value all unlisted securities, not publicly quoted, *ad libitum*, at any price necessary to produce solvency.

In spite of the remonstrances of Mr. Tatlock and Mr. M. M. Dawson, one of the most eccentric of these methods was adopted, that of averaging the thirteen valuations from December 31, 1906, to December 31, 1907, inclusive, adding them all together and

dividing the sum by thirteen. This, like all the other schemes, was an attempt to have a sworn valuation which pretended to be at the market but was not. The State superintendents who agreed upon this pseudo-market valuation do not yet see that the whole trouble arises from making market value in any way the standard; this it is utterly unfitted to be a standard of solvency for these companies. Again we say that these gentlemen, being "statesmen" and not mathematicians, should have consulted their actuaries.

The savings banks occupy a position somewhat similar to that of the life companies. They are more subject to sudden liquidation, but this, by the law of averages, never extends beyond a small percentage of their total deposits; hence to scale their assets down to auction prices is entirely unjust. The savings banks of this State, however, had taken up the subject earlier, and beginning about 1904 the books have been gradually transformed by most of them to an amortization basis. Mr. Kilburn, the former superintendent of banks, announced that after a reasonable time for preparation he should insist on the amortized values being given and the surplus being stated on that basis. Mr. Clark Williams, the present superintendent, while approving the principle, did not think the time opportune for a change.

In his annual report, however, Mr. Williams has presented a most strikingly clear and lucid argument in favor of the scientific plan of valuation, and recommends "that statutory provision be made for the valuation of the assets of savings banks and the capital investments of trust companies by amortization, and that profits and losses thereon be calculated on the same basis."

Mr. Williams further proposes to provide a precautionary reserve against possible loss in liquidation. He thus recognizes the distinction between the savings bank and the commercial bank on the one hand, and between the savings bank and the life insurance company on the other. The savings bank and the life company are both investment-machines to provide for future needs: the former is required to pay at more irregular times, and hence may, under peculiar circumstances, require an extra reserve besides its normal surplus.

This method of providing against possible losses, not by reducing all assets to a lower figure, but by a proper reserve, is good accountancy; and it is precisely in line with the quotation given by

Mr. Tatlock from Mr. Leon O. Fisher, of the Equitable: "Special provision should always be made for any anticipated losses of principal (through the insolvency of the debtor), but such provision should be made by creating special reserves from surplus, rather than by writing down the amortized cost value." This dictum is strictly applicable to the accountancy of savings banks if we omit the words in brackets or write after them "or through sales compelled by unusual demands from depositors."

It may be remarked that the market-value surplus rests solely upon tradition and that it is nowhere prescribed by law. Mr. Williams, we think, might very properly have enforced the investment-value basis at this juncture. The only provision of the law governing his department (§124) which could be construed as a guide for this, would point to par as the standard and has always been treated as inapplicable.

The agitation for reform in the basis of valuation of term-securities originated among the certified public accountants of New York State and our late colleagues, Charles Waldo Haskins and Joseph Hardcastle, were among its zealous advocates. THE JOURNAL has consistently advocated the scientific method and used its influence against the popular fallacies on the subject; holding:

That the coupon is not necessarily the interest;

That the amount paid at maturity is not necessarily the principal invested;

That profits and losses cannot be made by marking property up and down;

That a surplus for going on differs from a surplus for winding up;

And that, in Mr. Tatlock's language, "the theory of valuation of bonds at market values is wholly at variance with the principles which underlie the proper conduct of the business of life insurance, and does not at any time represent the actual facts of a given financial situation."

Thomas P. Ryan.

Public accountants throughout the United States have learned with profound sorrow that Thomas P. Ryan died Tuesday even-

ing, December 24, 1907. He was 47 years of age, having been born on October 18, 1860, in New York City. The interment was in Woodlawn Cemetery on Saturday, December 28. A service was held at his late home by the Elks, of which organization he was a member, and the remains were then brought to St. Mary's Roman Catholic Church where a solemn high Requiem Mass was sung. Mr. Ryan's life-long friend, the Rev. William Livingston, paid a tribute to the life and character of the deceased. Father Livingston was assisted by Rev. John J. Fullam and Rev. Henry A. Curtin, deacon and subdeacon, respectively, and Edward A. Loehr, of St. Joseph's Seminary, was Master of Ceremonies. There were present in the chancel: Rev. C. R. Corley, pastor of St. Mary's; Rev. John J. Wynne, S. J., editor of the Catholic Encyclopedia, with which Mr. Ryan was closely identified; Rev. Father Neely of Rome; Rev. J. J. McNamee of Mt. St. Vincent; Rev. M. J. Murray; and Rev. J. F. Kelahan. A number of the members of Mr. Ryan's profession were present. The pall-bearers were: Elijah W. Sells, Franklin Allen, T. Cullen Roberts, and Adam A. Ross, Jr., members of the Executive Committee of The American Association of Public Accountants, and J. R. Loomis and William F. Weiss of the New York State Society of Certified Public Accountants.

Mr. Ryan was a member-at-large of The American Association of Public Accountants, and a member of its Board of Trustees, its Executive Committee, and its Committee on Review of Appropriations-Budget, and Chairman of its Committee on By-Laws. At the last annual meeting of the Association, held at St. Paul in October, 1907, he presented numerous recommendations for important amendments to the By-Laws, and they were unanimously adopted. Mr. Ryan was also a member of the New York State Society of Certified Public Accountants, having been one of the charter members, 1897. He was elected a director during that year and was a director at the time of his death. On May 14, 1906, he was elected Vice-President. He was the first chairman of the Committee on Complaint and always remained a member of that Committee, and served as a member or as Chairman on nearly all the important committees of the Society. Ever since the Society became a member of The American Association he has been a delegate, and was one of the conference committee appointed for the purpose of uniting the various accounting

societies. It was Mr. Ryan who was instrumental in bringing to the attention of the New York Bankers' Association the desirability of inserting in the form of statement which the Association recommended, the query whether or not the accounts had been audited by a certified public accountant. Mr. Ryan was also a member of the Transportation Club, the Catholic Club, and the Fabian Union in New York City, and the City Club.

He enjoyed to an extraordinary degree the confidence of his clients, not only in his integrity, but in his sagacity and sound business judgment. He held certificate No. 16 issued by the Regents of the University of the State of New York on April 9, 1897, for the degree of certified public accountant.

Mr. Ryan was active in the promotion of all matters in the interest of the development of the profession of public accountancy. He was a contributor to its literature. At the last annual meeting of The American Association he read a paper on "The Accountant in the World of Affairs," which appeared in this Journal in December. Mr. Ryan's broad-minded attitude and his unselfish devotion of hours and days of labor to the interests of his profession won the esteem and hearty admiration of his associates. His death is a severe loss to the American Association.

Mr. Ryan was married to Miss Mary Jennings on October 3, 1889, who with their four children, Cecil, aged 16, Alice, aged 13, Thomas, aged 11, and Ruth, aged 8, survives him.

At a meeting of the Executive Committee of The American Association, held on December 30, 1907, the regular order of business was suspended and the following resolutions were adopted:

By the untimely death of Mr. Thomas P. Ryan, on December 24, 1907, in his forty-seventh year, The American Association of Public Accountants is called to mourn the loss of an associate whose professional qualities won our admiration, and whose personality endeared him to our hearts.

Be it therefore

RESOLVED, That the Executive Committee of the Association desires to express its appreciation of his worth as a man and colleague. His actions in all things were governed by the highest standard of honor and integrity His duties in this Association were performed with the most conscientious fidelity and sound judgment. His extensive experience as an accountant and in varied business affairs made his counsel and opinions of exceptional value, and added materially to the success of our association in the advancement as well as the protection of the interests intrusted to our care. In his life our esteemed friend exemplified resourcefulness in

counsel and debate, courtesy of manner, kindliness of disposition, and the helpful spirit to those less gifted than himself. We therefore record our heartfelt sorrow in the loss of a most faithful and zealous member of this Association.

Be it further

RESOLVED, That to the bereaved family of Mr. Ryan our sincere sympathies are hereby tendered in their great sorrow, and as a mark of our esteem and regard, it is hereby

VOTED, That these resolutions be entered on the minutes of the Executive Committee, and a copy suitably engrossed be sent to Mr. Ryan's family.

FRANKLIN ALLEN, New York; J. E. STERRETT, Pennsylvania; A. A. ROSS, JR., Pennsylvania; THOS. CULLEN ROBERTS, *Secretary*, New Jersey; H. T. WESTERMANN, *Treasurer*, Missouri; E. W. SELLS, *President*, New York, *Executive Committee*.

NEW YORK, December 30, 1907.

At a meeting of The New York State Society of Certified Public Accountants held on January 13, 1908, the regular order of business was suspended and the following resolutions were adopted:

Let us pause for a few brief moments, and count our numbers—there is one missing from our midst, for death has claimed a beloved friend and associate. Let us here record with sincere sorrow, our deep sense of loss in the passing from his earthly activities, of Thomas P. Ryan. Our late colleague had not completed the fifth decade of his life, and his matured experience and ripened powers seemed to hold the promise of many active years in our midst. But if the measure of life did not meet with the hopes and wishes of his friends, he lived long enough to demonstrate in a striking way not only his ability and disposition to render influential and enduring service, but, even more, the purpose of his acts was manifestly high and kindly.

Evincing always a marked degree of interest in the profession, he served with honor and credit in whatever position he was called upon to fill.

Of a genial disposition, he was ever ready with kindly wit, yet never lacked firmness, dignity, and moderation when in debate.

The early demise of our esteemed colleague has brought to a close a useful life, but we, who remain, may obtain consolation in the sentiment,

"Heaven gives its favorites—early death."

RESOLVED, That we place upon our records this minute of esteem and regret, and extend to the family of our deceased friend our heartfelt sympathy in this, their greatest loss.

(Signed) HENRY R. M. COOK, SAMUEL D. PATTERSON, LEON BRUMMER, *Committee.*

New Accountancy Course in Chicago.

It is announced that a School of Commerce is about to be organized in the City of Chicago through the coöperation of Northwestern University, the Illinois Society of Certified Public Accountants, the Chicago Chapter of the American Institute of Banking, and certain public spirited citizens. It is proposed to open the School in October, 1908, in the Northwestern University Building at the corner of Lake and Dearborn Streets, for evening courses in Finance, Accountancy, Auditing, Commercial Law, Economics, and other commercial subjects.

The purpose of this School of Commerce will be to train men who are already engaged in active business during the day, but who feel the need of more extensive preparation, especially with the expectation of taking the state examination for Certified Public Accountants, or the examination for the certificate of the American Institute of Banking. The School will attempt first to supply these most pressing needs. The courses will meet every Monday to Thursday evenings, inclusive, from 7.30 to 9.30, from October until June, and the tuition fee will not exceed $75.00 for the four courses throughout the year.

So many men have expressed a desire to take up work of this nature during the present year, that a course in finance was organized in October and is now under way with thirty-five registrations. The course is being given by Professor Earl Dean Howard of Northwestern University, and meets on Thursday evenings at 7.30 in Hurd Hall, Northwestern University Building. This course was especially prepared for bank and brokers' employees, and includes instruction in the principles of Money, Credit, Banking, Corporation Finance, etc.

So many inquiries have been made concerning instruction in Accounting that arrangements have been made with Mr. Seymour Walton, C. P. A., of the firm of Buchanan, Walton, Joplin & Company, who will conduct a course of thirty-six evenings of two hours each, meeting on Wednesdays and Fridays, from 7.30 to 9.30, beginning January 8, 1908. This will be the equivalent of three terms of twelve weeks each of the regular course. Mr. Walton will be assisted in this course by Professor Earl Dean Howard of Northwestern University. The students will receive mimeographed lecture notes similar to those of the course in Finance.

The only requirement for admission to this course is a knowledge of elementary bookkeeping, together with practical experience in bookkeeping. The work will include the practice and theory of accounts, with special view to preparing the students for the C. P. A. examination. The amount of ground which can be covered in the thirty-six evenings will depend upon the students themselves. The tuition fee for this course will be $30, payable in three installments of $10 each. This will include the mimeographed lecture notes mentioned above. A student

who successfully completes this course will be entitled to credit in the proposed School of Commerce. Those who contemplate taking up the three-year course in the School of Commerce will do well to begin the work this year, thus reducing the number of evenings which must be spent upon it from four to three next year. Further information regarding either the course in Finance or the course in Accounting may be had by correspondence or preferably by calling in person upon Mr. Walton at his office, or upon Professor Earl Dean Howard on Thursday evenings, at the Northwestern University Building, or at Northwestern University, Evanston, Illinois.

Illinois.

The Illinois Society of Certified Public Accountants held a largely attended meeting at the Chicago Athletic Club on November 26th. The guests of honor at the dinner and meeting were Professor Earl Dean Howard of Northwestern University and Professor Trevor Arnett of the University of Chicago. The subject for discussion was the growing demand for a business education on the part of the Chicago public and the manner in which the Illinois Society could meet that demand. Great interest was manifested in the discussion and in the plans outlined by the two professors, and there is no doubt that the result will be the establishment of a School of Commerce and Finance in Chicago that will compare favorably with those in the East.

The Illinois Society is rapidly adding to its membership and is looking forward to great activity in educating the public in a proper knowledge of the Certified Public Accountant and the establishment of the title of C. P. A. as the mark of excellence in this country.

A class of nine men applied for examination for the C. P. A. degree at the meeting of the Examining Board on December 2d.

New York Board of Examiners.

The following Board of C. P. A. Examiners was appointed December 21, 1907: Thomas Bird Dixcy, of Loomis, Conant & Co.; Duncan MacInnes; Henry A. Niles, of Niles & Niles. Mr. Dixcy is president, and Mr. MacInnes secretary.

Mr. H. C. Whitehead, one of the best known railway accountants in the country, has resigned his position as consulting auditor of the Atchison, Topeka and Santa Fé System, and proposes in the near future to engage in business in Chicago as a public accountant and consulting auditor. Mr. Whitehead has been in the railway service for thirty-five years and has been connected with the Atchison for twenty-seven years. He was appointed General Auditor of the Santa Fé System in 1896 and was made Consulting Auditor in 1905. Mr. Whitehead has been a member of the Association of Railway Accountants since its existence, having served as its president for one term. He is widely known among public accountants and will receive a cordial welcome in the profession. Mr. Whitehead is the author of a small treatise on Railway Accounts, published by the New York University School of Commerce, Accounts and Finance, and is now preparing a comprehensive volume on the subject.

Book Department.

PRACTICAL AUDITING. A Working Manual for Auditors, by George B. Renn, Chicago, Ill. 1907, Second Edition, Price $3.00.

This manual deserves the title it bears, as details or exposition of principles are avoided. In his preface to the first edition the author states:

"The purpose of this manual is, therefore, to set forth minutely the details to be pursued in making a commercial audit, and to indicate in proper order the procedure to be followed."

Indeed the manual does set forth minutely the steps by which an audit should proceed. A manual that in giving special instructions begins, "Select a well lighted location to work in, and reserve to yourself ample space for handling the books and papers," indicates the thoroughness of the author.

The book is divided into three parts. Part I contains "General Consideration of Principles and Methods." A prominent feature of this part is the Controlling Account. The author gives here illustrations how to verify the debit or credit balances of personal accounts on the Trial Balance, with the Accounts Receivable or Accounts Payable Controlling Accounts. Part II is a "Description in complete detail of the method of conducting a commercial audit, arranged to indicate in proper order the successive steps of procedure," and concludes with an auditor's report made out in standard form.

In this part there is also given the form of an auditor's certificate. Part III contains instructions for special audits.

While the book lacks one or two details, such as a form for the analysis of accounts, or a form for reconciling bank balances, both of which would be desirable in a manual of this kind, yet it is an inestimable addition to accountancy literature of benefit to the accountant student or inexperienced auditor.

The contents of the book may be summed up in the words: "It tells precisely how to make a commercial audit."

LEO GREENDLINGER.

MONEY AND INVESTMENTS: A reference book for the use of those desiring information in the handling of money or the investment thereof, by Montgomery Rollins. Pages 436. Boston: Dana Estes & Co. London: Gay & Bird. 1907. Price $3.00.

The title and sub-title of this book do not clearly indicate its character. It is really a financial encyclopedia and is a remarkably good one. The author's viewpoint is indicated from the following sentences from the foreword: "It has long been my belief that there is need of some publication in which a mere beginner in the handling of money may seek for

assistance in unraveling the mysteries in the expressions of Wall and State Streets, and giving in concise form such instruction as above stated." With this thought in mind Mr. Rollins undertakes to explain all varieties of the Street jargon. The amateur will find here a fairly complete vocabulary of Wall Street, including the formal and proper phrases as well as slang. For instance, running over the book at random we find explanations of such expressions as the following: The Bank of England Statement, big Katy, bill broker, bills payable, blanket mortgage, board man, ex-rights, flat finance bill, short sale, contango, etc., etc. Such a book cannot be reviewed in detail. We have, however, examined enough definitions to feel convinced that Mr. Rollins has done his task with a great deal of intelligence and fidelity. It will be of value to a good many people who do not think themselves amateurs, for much of the information it contains is only fairly well known to the average man in the Street.

THE FUTURE IN AMERICA. By H. G. Wells. Harpers, 1906. 259 Pages. Price, $2.00, net.

Within a short time Americans have been favored with criticisms from three noted authors, Professor Münsterberg, Mr. Henry James, and Mr. H. G. Wells. The different points of view assumed by the German, ex-American and English critics are not among the least interesting and instructive lessons to the American reader. Suffice it to say, however, that Mr. Wells does not think it necessary to remind Americans of their "good points." He recognizes in us enough of that inherited characteristic of self-complacency to obviate the necessity of any flattering allusions. It is not surprising that the Englishman considers it rather an impertinence on the part of America to enter as a competitor into that field of insularity which he has held so long as a monopoly. Although there are few complimentary statements, nevertheless the book itself is a high compliment to American intelligence. Mr. Wells does not follow the established European practice of shaping a compliment comprised of fine phrases for the American ear, and a quiet wink for his own compatriots. But then, dealing in cultured subtleties is the English substitute for a joke! We can thank Mr. Wells for presenting unpleasant truths to us as he sees them and as we ought to see them, if we expect to fulfill the destiny we have so confidently proclaimed. In what direction these faults lie as seen by the author is suggested by the chapters on "Corruption," "Some Aspects of American Wealth," "The Immigrant," "State Blindness," "Two Studies in Disappointment," "The Tragedy of Color."

The book ought to be read by every business man. The subject matter, although varied, is all shaped to the theme embodied in the paragraph on political corruption. "It seems to me that the political corruption that still plays so large a part in the American problem is a natural and necessary underside to a purely middle class organization of society for *business*. Nobody is left over to watch the politician." Mr. Wells has adopted a popular style of writing, but not at the sacrifice of subject matter.

Every page bristles with epigrams, of which style Mr. Wells is a master. Thus he characterizes the individualist's Utopia, "A commercial life in a world of economic angels and magic justice." "In reality," he continues, "value is a dream, and the commercial ideal is to buy from the needy, sell to the urgent need, and get all that can possibly be got out of every transaction. To do anything else isn't business—it's some other sort of game." Police graft arises from holding that "A position of trust is a position of advantage, and deserves a percentage." The "thickening atmosphere of private enterprise is developing something which is not stealing, but, nevertheless, the automatic cash-register becomes more and more of a necessity." "But there is one word I find all too frequently in the American papers, and that is 'stealing.' They come near calling any profitable, rather unfair bargain with the public a 'steal.' It's the common journalistic vice here always to overstate. Every land has its criminals, no doubt, but the American, I am convinced, is the last man in the world to steal. Nor does he tell you lies to your face, except in the way of business. He's not that sort of a man. Nor does he sneak bad money into your confiding hand. Nor ask a higher price than he means to accept. Nor cheat on exchange. For all the frequency of 'graft' and 'stealing' in the press head-lines, I feel the American is pretty distinctly less 'mean' than many Europeans in these respects, and much more disposed to be ashamed of meanness." "But he certainly has an ethical system of a highly commercial type. If he isn't dishonest he's commercialized. He lives to get, to come out of every transaction with more than he gave."

One is tempted to go on indefinitely quoting from this interesting book. The following will perhaps indicate the lesson the author would point: "The greatest work which the coming century has to do in this country is to build up an aristocracy of thought and feeling which shall hold its own against the aristocracy of mercantilism." L. G.

GILBRETH'S FIELD SYSTEM. The Myron C. Clark Publishing Company New York. 1908. Pages 194. Price $3.00.

The book gives in detail the system, including general orders and forms, which is in use by a large contractor. The contractor has gone on the principle of putting everything into writing, and has finally worked out a code of rules under which his employees work with the precision and discipline of a well-drilled army. The book, in fact, is somewhat similar in many respects to the army regulations. It contains among other things a fairly complete description of the loose leaf accounting system which the contractor employs. Accountants who have to deal with large firms with plants in many localities will find the book well worth a careful study.

C. P. A. Question Department.

CONDUCTED BY LEO GREENDLINGER, B. C. S.

The first of the two following problems is question 1-2 in Practical Accounting, set by the University of the State of New York at the June, 1907, examination. The second is the first afternoon question in Practical Accounting set by the same State Board at the October, 1907, examination. Both problems are solved at the request of subscribers of THE JOURNAL, by W. H. Dennis, B. C. S., C. P. A., Professor of the Principles and Practice of Accounting in the New York University School of Commerce, Accounts and Finance. Question 1-2 of the June, 1907, examination is also solved, additionally, by one of the leading certified public accountants of this State, showing the different forms in which the questions can be answered, according to the view taken.

QUESTION 1-2 (June, 1907).

The books of a manufacturing concern, operating under a system of cost accounts, show the following conditions at the opening of the fiscal year: Raw materials in storeroom, $15,621.42; factory pay roll, applied and distributed but not paid, 2 days, $831.78; partly manufactured goods, at prime cost, $63,888.44; and the further value of $8,037.17, to cover factory burden, also $12,074.92 to cover management charges; finished wares in stock at total cost of $21,656.01.

The financial operations during the ensuing year include: purchases of raw materials, $80,416.45; factory pay rolls, $125,793.90; factory expense including wages not applied to cost accounts, $24,846; management expenses, $38,100; interest paid on loans, $1,200; income from investments $5,004.

The manufacturing operations during the same year comprehend: raw materials issued on requisition for consumption, $79,820.34; wages applied and distributed to manufacturing cost, $120,250.40, and to factory expenses, $5,959.39 included in the sum stated in preceding paragraph.

Finished goods transferred from factory to warerooms, at prime cost, covering materials, $78,542.58, and labor, $118,333.75. The trading operations during the same year comprehend: cost of goods sold, $251,-949.90; proceeds from goods sold, $302,339.88.

At the close of the year the partly completed goods included, in addition to prime cost, the further elements of value to cover factory and management expenses in the amounts respectively of $8,439.02, and $12,676.66, and factory pay roll for three days amounting to $1,247.67, which has been applied and distributed, though not due till the close of the current work.

The basis of the apportionment On Cost or Overhead Charges was as follows: factory expense 20% to materials and 80% to labor; management expenses 30% to materials and 70% to labor.

The transactions of the previous year in round amounts were used in calculating the current year's apportionments, viz: Materials, $75,000; labor, $115,000; factory expense, $24,000; management expense, $36,000.

Open the general ledger accounts that control the cost accounts; show the operation of each and the net profits resulting; also calculate the percentage to be added to each $1 of material and of labor to give the total cost.

SOLUTION I. (By Prof. Dennis.)

COST ACCOUNTS OF THE BLANK MANUFACTURING COMPANY.

Raw Materials.

Inventory at commencement	$15,621.42	Manufacturing Account, being amount of requisitions for consumption	$79,820.34
Purchases during period	80,416.45	Balance carried down	16,217.53
	$96,037.87		$96,037.87
Balance	$16,217.53		

Factory Pay Roll.

Cash	$125,793.90	Balance at commencement, being two days' labor applied and distributed but not paid	$831.78
Balance, three days' labor applied and distributed but not due	1,247.67	Manufacturing Acc't: Wages applied and distributed	120,250.40
		Factory General Expense: Am't not applied to prime cost	5,959.39
	$127,041.57		$127,041.57
		Balance, Three days' wages applied and distributed	$1,247.67

FACTORY GENERAL EXPENSE.

Balance at commencement, Inventory of partly manufactured goods		$8,037.17	
Cash	$24,846.00		
Less wages not applied to cost account	5,959.39	18,886.61	
Factory Pay Roll Account, Wages not applied to prime cost		5,959.39	
		$32,883.17	
Balance, Inventory		$8,439.02	
Finished Goods Account			$24,444.15
Transfer of the total expenditure under this account, less the proportion applied to partly manufactured goods as per inventory, being 98.40336% of $24,846.00			
Balance carried down, being the amount referred to above			8,439.02
			$32,883.17

MANAGEMENT EXPENSE.

Balance at commencement		$12,074.92	
Proportion of expense applicable to partly manufactured goods included in inventory.			
Cash		38,100.00	
		$50,174.92	
Balance, Inventory		$12,678.66	
Finished Goods Account			$37,496.26
Transfer of total expense under this caption less the proportion applicable to, partly manufactured goods as per inventory, being 98.40336% of $38,100.00.			
Balance carried down being the amount referred to above			12,678.66
			$50,174.92

MANUFACTURING ACCOUNT.

Balance at commencement		$63,888.44	
Prime cost of partly manufactured goods			
Raw Material Account		79,820.34	
Requisitions for consumption			
Factory Pay Roll Account		120,250.40	
Wages applied and distributed			
		$263,959.18	
Balance, Inventory at prime cost		$67,082.85	
Finished Goods Account:			
Transfer of value of finished goods from factory to warerooms at prime cost, viz.:			
Materials	$78,542.58		
Labor	118,333.75	$196,876.33	
Balance, Inventory at prime cost		67,082.85	
		$263,959.18	

FINISHED GOODS.

Balance at commencement, being the total cost as per inventory		$21,656.01	
Manufacturing Account:			
Goods transferred from factor to wareroom at prime cost, viz:			
Materials	$78,542.58		
Labor	118,333.75	196,876.33	
Factory General Expense:			
Proportion of Factory Expense applicable to finished goods, 98.40336% of $24,846		24,444.15	
Management Expense:			
Proportion of Management Expense applicable to finished goods		37,496.26	
		$280,472.75	
Balance, Inventory		$28,522.85	
Trading Account:			
Cost of goods sold			$251,949.90
Balance, Inventory			28,522.85
			$280,472.75

PROFIT AND LOSS ACCOUNT.

Finished Goods Account:		Sales	$302,339.88
Cost of goods sold	$251,949.90		
Balance, prime profit	50,389.98		
	$302,339.88		$302,339.88
Interest paid on Loans	$1,200.00	Balance	$50,389.98
Net profit to Income Account	54,193.98	Income from Investments	5,004.00
	$55,393.98		$55,393.98

Manufacturing operations during the year:

Raw Material issued on requisitions.....	$79,820.34
Labor applied and distributed to M'f'g. Cost...	120,250.40
Year's charge to Prime Cost.....	$200,070,74
Overhead charges during the year:	
Factory Expense.....	$24,846.00
Management Expense.....	38,100.00
Year's Overhead charges.....	$62,946.00

$\frac{62,946}{200,070.74}$ = 31.46187% percentage to be added to prime cost to make cost of production.

Finished Goods during the year at prime cost:

Raw Material.....	$78,542.58	
Labor.....	118,333.75	$196,876.33

$\frac{196,876.33}{200,070.74}$ = 98.40336% percentage of year's prime cost used in finished goods during year.

Therefore,

$24,846.00 x 98.40336% = 24,449.30 = Factory Expense, and

$38,100.00 x 98.40336% = 37,491.68 = Management Expense.

Proof: $196,876.33 x 31.46187% = 61,940.98,
and 24,449.30 + 37.491.68 also = 61,940.98.

Hence, 31.46187% is to be added to each dollar of Labor and Material.

SOLUTION II.

Assuming that the manufacturing account is intended to be exactly balanced by the credits of product finished and final inventory, the accounts would be stated as below. The relation between prime cost and expenses cannot be proved for either product finished or final inventory. The product was presumably partly made in the previous year when other percentages for indirect expenses may have been used. The prime cost of the final inventory is not ascertainable separately for materials and labor, and the proportion of each affects the indirect expenses chargeable on the basis given. The figures used for factory expense and management expense in the product finished are therefore merely those which are found to be uninventoried, and therefore presumably previously dealt with in crediting product finished.

If in the final paragraph, "calculate the percentages to be added" means on the basis of the figures in the two preceding paragraphs, the percentages are 20.8 to materials and 38.609 (approx.) to labor.

MATERIALS ACCOUNT.

Inventory	$15,621.42	Issued to Factory	$79,820.34
Purchases	80,416.45	Inventory	16,217.53
	$96,037.87		$96,037.87

MANUFACTURING ACCOUNT.

Dr. Cr.

	Factory Expense.	Management Expense.	Prime Cost.		Factory Expense.	Management Expense.	Prime Cost.
Inventory	$8,037.17	$12,074.92	$63,888.44	Finished			
Materials			79,820.34	Materials			$78,542.58
Labor			120,250.40	Labor			118,333.75
Factory Expense	24,846.00			Factory Expense	$24,444.15		
Management Exp.		38,100.00		Management Exp.		$37,496.26	
				Inventory	8,439.02	12,678.66	67,082.85
	$32,883.17	$50,174.92	$263,959.18		$32,883.17	$50,174.92	$263,959.18

FINISHED GOODS.

Inventory		$21,656.01	Cost of Goods sold	$251,949.90
Transferred from Factory:			Inventory	28,522.85
Materials	$78,542.58			
Labor	118,333.75			
Factory Expense	24,444.15			
Management Expense	37,496.26	258,816.74		
		$280,472.75		$280,472.75

TRADING ACCOUNT.

Cost of Goods sold	$251,949.90	Sales	$302,339.88
Profit	50,389.98		
	$302,339.88		$302,339.88

PROFIT AND LOSS ACCOUNT

Interest paid on Loans	$1,200.00	Profit:	
Balance, Net Profit	54,193.98	per Trading Account	$50,389.98
		Income from Investments	5,004.00
	$55,393.98		$55,393.98

C. P. A. Question Department.

QUESTION I (October, 1907).

An issue of $250,000 fifty year bonds, dated July 1, 1904, is redeemable by a Sinking Fund into which annual cash installments are to be paid by deposit of funds in a Trust Company which allows interest at the rate of 2% per annum, credited January 1 and July 1. Separate books are to be kept solely for recording the sinking fund operations. The fund so created is to be invested in interest-bearing securities, and the income therefrom is to be applied to the reduction of the succeeding annual installments.

On July 1, 1905, ,the first installment of $5,000 was paid into the fund, and on the same day the following investments therefor were made:

Two 5% bonds of $1,000 each, April 1 and October 1, at par and accrued interest.

Two 6% bonds of $1,000 each, May 1 and November 1, at $110 and accrued interest.

On July 1, 1906, the second installment was duly deposited to the credit of the fund, and on the same day the 5% bonds purchased in the previous year were sold at 101 and accrued interest, and other investments were purchased as follows:

Two 6% bonds of the same issue as those purchased in the previous year at 105 and accrued interest.

Five 4% bonds of $1,000 each, February 1 and August 1, at 98 and accrued interest.

The income from all investments was regularly received and deposited, and the value of the 6% bonds purchased in 1905 was written down to conform to the value of the bonds of the same issue purchased in 1906 at the time of said latter purchase.

Frame journal entries and write up the Sinking Fund ledger accounts showing the amount of the cash installments, payable on July 1, 1906, and July 1, 1907, and the status of the Sinking Fund at said dates.

SOLUTION.

TRUST DEPARTMENT.

Journal.

July 1, 1905.

Sinking Fund Cash	$5,000.00	
$5,000 deposited with Banking Department.		
To Sinking Fund		$5,000.00
First deposit to create the fund.		
Sinking Fund Securities	$4,200.00	
2—5% bonds purchased at 100 $2,000		
2—6% bonds purchased at 110 $2,200		
To Sinking Fund Cash		$4,200.00
Check drawn on banking department in payment of bonds purchased.		

Sinking Fund Income $45.00
Interest accrued, not due on bonds purchased,
2—5% April 1 to July 1 ..... $25.00
2—6% May 1 to July 1 ..... $20.00
To Sinking Fund Income $45.00
Cash Reserve to be deducted from first income cash received.
October 1, 1905.

Sinking Fund Income Cash $50.00
Cash received from income.
November 1, 1905.

Sinking Fund Income Cash $60.00
Cash received from income.
To Sinking Fund Income $60.00
Six months' interest on 2—6% bonds.
January 1, 1906.

Sinking Fund Income Cash $8.06
Interest credited by the banking department to the cash account
To Sinking Fund Income $8.06
2% interest on deposits, allowed by the banking department.
April 1, 1906.

Sinking Fund Income Cash $50.00
To Sinking Fund Income $50.00
Six months' interest received on 2—5% bonds.
May 1, 1906.

Sinking Fund Income Cash $60.00
To Sinking Fund Income $60.00
Six months' interest on 2—6% bonds.
July 1, 1906.

Sinking Fund Income Cash $9.16
To Sinking Fund Income $9.16
2% interest on deposit balances, credited by the banking department to cash.

Sinking Fund Income $192.22
To Sinking Fund $192.22
Balance of income transferred to principal.

Sinking Fund Cash $192.22
To Sinking Fund Income Cash $192.22
Balance transferred from income to principal.

Sinking Fund Cash $4,807.78
To Sinking Fund $4,807.78
Second installment to redemption fund, viz: supposed installment, $5,000.00, less income balance, $192.22.

Sinking Fund Cash $2,020.00

	To Sinking Fund Securities	$2,020.00
	Sale of two 5% bonds at 101 and interest.	
	Sinking Fund profit of 1% on above sale	20.00
Sinking Fund Income Cash	$25.00	
	To Sinking Fund Income	$25.00
	Three months' accrued interest on 2—5% bonds, sold April to July 1st.	
Sinking Fund Securities	$7,000.00	
	To Sinking Fund Cash	$7,000.00
	Purchase of 2—6% bonds at 105, $2,100, 5—4% bonds at 98, $4,900.	
Sinking Fund Income	$103.30	
	To Sinking Fund Income Cash	$103.30
	Two months' accrued interest (May-July) on 6% bonds, $20.00.	
	Five months' accrued interest (February-July) on 4% bonds, $83.30	$103.00
	August 1, 1906.	
Sinking Fund Income Cash	$100.00	
	To Sinking Fund Income	$100.00
	Six months' interest collected on 5—4% bonds.	
	November 1, 1906.	
Sinking Fund Income Cash	$120.00	
	To Sinking Fund Income	$120.00
	Six months' interest collected on 4—6% bonds.	
	January 1, 1907.	
Sinking Fund Income Cash	$8.72	
	To Sinking Fund Income	$8.72
	2% interest on deposit balance allowed by banking department.	
Sinking Fund Income Cash	$220.00	
	To Sinking Fund Income	$220.00
	February 1, 1907, interest 5—4% bonds, $100, May 1, 1907, interest on 4—6% bonds, $120.	
	July 1, 1907.	
Sinking Fund	$100.00	
	To Sinking Fund Securities	$100.00
	Writing down two bonds from 110 to 105.	
Sinking Fund Income Cash	$10.90	
	To Sinking Fund Income	$10.90
	Interest on deposit balances at 2%.	
Sinking Fund Income	$381.32	
	To Sinking Fund	$381.32
	Transfer of income balance.	
Sinking Fund Cash	$381.32	
	To Sinking Fund Income Cash	$381.32
	Transfer of cash balance funds.	
Sinking Fund Cash	$4,618.32	
	To Sinking Fund	$4,618.32
	Third installment, $5,000.00, less income balance, $381.32.	

SINKING FUND INCOME AND CASH ACCOUNTS.

Dr.	Income	Cash	Cr.	Income	Cash
Cash Account	$45.00		Income Account		$45.00
Sinking Fund Income		$50.00	Cash	$50.00	
" " "	60.00	60.00	"	60.00	
" " "		8.06	"	8.06	
" " "		50.00	"	50.00	
" " "		60.00	"	60.00	
" " "		9.16	"	9.16	
Cash	192.22		Sinking Fund		192.22
	$237.22	$237.22		$237.22	$237.22

Dr.	Income	Cash	Cr.	Income	Cash
Sinking Fund Income		$25.00	Cash	$25.00	
" " " Cash	$103.30		Sinking Fund Income		$103.30
" " "		100.00	Cash	100.00	
" " "		120.00	"	120.00	
" " "		8.72	"	8.72	
" " "		100.00	"	100.00	
" " "		120.00	"	120.00	
" " "		10.90	"	10.90	
Cash	381.32		Sinking Fund Cash		381.32
	$484.62	$484.62		$484.62	$484.62

PRINCIPAL AND FUNDS.

Dr. Cr.

	Cash	Securities	Fund		Cash	Securities	Fund
Sinking Fund	$5,000.00			Cash			$5,000.00
Cash		$4,200.00		Securities	$4,200.00		
Income	192.22			Income			192.22
Sinking Fund	4807.78			Cash			4,807.78
Securities	2,020.00			"		$2,000.00	20.00
Sinking Fund		7,000.00		Securities	7,000.00		
Securities			$100.00	Sinking Fund		100.00	
Income	381.32			Income			381.32
Sinking Fund	4,618.68			Cash			4,618.68
Balances			14,020.00	Balances	5,820.00	9,100.00	
	$17,020.00	$11,200.00	$15,020.00		$17,020.00	$11,200.00	$15,020.00
Balances	$5,820.00	$9,100.00		Balances			$14,920.00

DEPOSITORS' LEDGER.

Date	Particulars	Dr.	Cr.	Balance		Aggregate	Interest	%
1905								
July 1.....	Cash.....		$5,000.00					
" 1.....	"	$4,245.00		$755.00	92	$694.60		2
Oct. 1.....	"		50.00	805.00	31	249.55		
Nov. 1.....	"		60.00	865.00	61	527.65		
1906								
Jan. 1.....	Interest.....		8.06	873.06			$8.06	
	Balance.....	873.06						
		$5,118.06	$5,118.06		184	$1,471.80	$8.06	
1906								
Jan. 1.....	Balance.....		$873.06	$873.06	90	$785.75		
April 1.....	Cash.....		50.00	923.06	30	276.90		
May 1.....	"		60.00	983.06	61	599.63		
July 1.....	Interest.....		9.16	992.22	61		$9.16	
" 1.....	Balance.....	$992.22						
		$992.22	$992.22		181	$1,662.28	$9.16	

DEPOSITORS' LEDGER—*Continued.*

Date	Particulars	Dr.	Cr.	Balance		Aggregate	Interest	%
1906								
July 1.....	Balance.....		$992.22	$992.22				
" 1.....	Cash.....		4,807.78	5,800.00				
" 1.....	"		2,045.00	7,845.00				
" 1.....	"	$7,103.30		741.70	31	$229.91		
Aug. 1.....	"		100.00	841.70	92	774.31		
Nov. 1.....	"		120.00	961.70	61	586.60		
1907								
Jan. 1.....	Interest.....		8.72	970.42			$8.72	
	Balance.....	970.42						
		$8,073.72	$8,073.72		184	$1,590.82	$8.72	
1907								
Jan. 1.....	Balance.....		$970.42	$970.42	31	$300.70		
Feb. 1.....	Cash.....		100.00	1,070.42	89	952.30		
May 1.....	"		120.00	1,190.42	61	725.90	$10.90	
July 1.....	Interest.....		10.90	1,201.32				
" 1.....	Cash.....		4,618.68	5,820.00				
	Balance.....	$5,820.00						
		$5,820.00	$5,820.00	$5,820.00		$1,978.90	$10.90	

COMMENTS.

With all due respect to the New York State Board of Accountancy for setting a high professional standard for C. P. A. examinations, one cannot help speaking a few words in favor of the accountant student.

A perusal of Bulletin 15, June, 1903 (C. P. A. Syllabus), of the University of the State of New York will reveal the fact that the syllabus calls for Manufacturing Accounts and not *Cost Accounts*. It reads: "Accounts to indicate causes of loss by a firm whose sales and cost calculations indicated a profit. . . . . Manufacturing and Loss and Gain Accounts, and Balance-Sheet," etc. Reading this paragraph in the syllabus the candidate for the C. P. A. degree certainly does not expect to be surprised with such a problem as Question 1-2, especially when on page 240 of the above mentioned syllabus it is stated that the outline of the latter is also "*to serve as a limitation to those who prepare the questions.*"

It is true that Cost Accounting is becoming a prominent feature of the accounting profession, yet this is no reason why the accountant student should not find at the C. P. A. examinations what he expects to find according to the C. P. A. syllabus or else have the latter revised.

With regard to Question 1 (October, 1907), one can hardly tell under what section of the subject of Practical Accounting this would come. Surely not under that of "accounts involving bonds and other securities," as the syllabus does not disclose in the least the stress put by the State Board in this given problem, the solution to which, to be accurate, and this the Board certainly requires, would take three or four hours' work by the experienced practitioner. How then shall the candidate solve it in much less time?

With regard to the solutions it will be noticed that although the final results in both cases (Solutions I and II) are the same, each solution showing a net profit of $54,193.98, yet in the presentation of the solutions as well as in the technique there is no doubt that Solution I is clearer. The answer in the latter, relating to the percentage to be calculated and added to each $1 of material and labor to give total cost, appeals to us more than the percentages arrived at in Solution II. At least in Solution I, proof is furnished for the given answer.

The Closing Statement as given in Solution II, is superfluous. In the first place the question does not call for it, and, secondly, the assumption that the capital at the beginning consisted of the inventories only, as given in Paragraph I of the question, is quite strained.

The attention of the reader is also called to the fact that in Solution I, Factory Expense Account has $24,444.15 and Management Expense Account $37,496.26, while according to percentages shown the respective accounts should have $24,449.30 and $37,491.60. The latter figures are more correct, but the problem requires us to use the former, hence the difference.

With regard to the solution of the second problem (October, 1907), each item there is so explicit that one would not feel justified in using unnecessarily for comments the valuable space of THE JOURNAL.